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XV SYNC™ Installation Guide & User Manual

Abstract

This document contains work instructions related to installing, configuring, and utilizing XV Sync™ version 3.2 and above (compatible with XrayVision® version 3.11 build 47).

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REVISION HISTORY

Revision Level	Revision Date	Description of Revision	Effective Date	Revision Author (Initials)
1.0	5/13/2011	Initial Release	5/19/2011	SN
1.5	8/01/2011	Added revision history and other cosmetic changes.	8/01/2011	SN

XV SYNC™ OVERVIEW

What is XV Sync™?

XV Sync™ enables the synchronization of multiple Apteryx databases for a dental practice - whether across town or across the country.

For the synchronization to operate, the software must be installed and running on *at least two servers* (hereafter referred to as “sync servers”) with internet connections and/or network access to their respective databases.

A sync server may either be used to:

- Initiate sync operations with other sync servers.
- Receive synchronizations operations initiated by other remote sync servers.
- Both initiate and receive sync operations.

Sync operations can be manually started or scheduled for weekly recurrence.

Implementing XV Sync™

XV Sync™ provides multiple methods for synchronizing databases. In general, there are three different types of operations that a sync server can perform:

- **Forward** – Any sync server in an organization can target a specific sync server and initiate a forward action to send patient images to its XrayVision® database.
- **Retrieve** - Any sync server in an organization can target a specific sync server and initiate a retrieve action to obtain patient images from its XrayVision® database.
- **Synchronize** - Any sync server in an organization can target a specific sync server and initiate a synchronize operation, forwarding and retrieving patient images between the two XrayVision® databases.

The implementation strategy Apteryx, Inc. recommends requires the following:

- One sync server (e.g. at a Central Business Office) to schedule and initiate synchronization requests.
- One or more remote sync servers (e.g. at satellite locations) to receive synchronization requests.

Refer to [Appendix A: XV Sync™ Implementation Scenarios](#) for detailed description of recommended strategies to deploy XV Sync™.

It must be possible for sync servers to be able to communicate with each other. Accordingly, a Wide Area Network (WAN) must exist. This is typically accomplished over the internet via a VPN connection or forwarding of port 1011 by each location's router. Please contact your network administrator to make sure a viable WAN exists before implementing XV Sync™.

Minimum Requirements

- ✓ One Master XV Sync Server
- ✓ At least one Child XV Sync Server
- ✓ Wide Area Network (WAN) with internet connectivity established via:
 - VPN, or

- Forwarding of port 1011 by Router to sync server's IP
- ✓ XrayVision® 3.11 build 47 or above residing on Master and Child Sync Servers
- ✓ Apteryx Servicer (optional)

INSTALLING XV SYNC™

Sync Server System Requirements

Apteryx recommends the following for optimum performance:

- ✓ 32-bit or 64-bit Windows Operating Systems (Windows XP or greater)
- ✓ Internet transfer speeds/bandwidth maximized to accommodate anticipated size of files to be transferred.
- ✓ Disk space to accommodate the anticipated growth of patient databases
- ✓ Time necessary to backup the database at each location

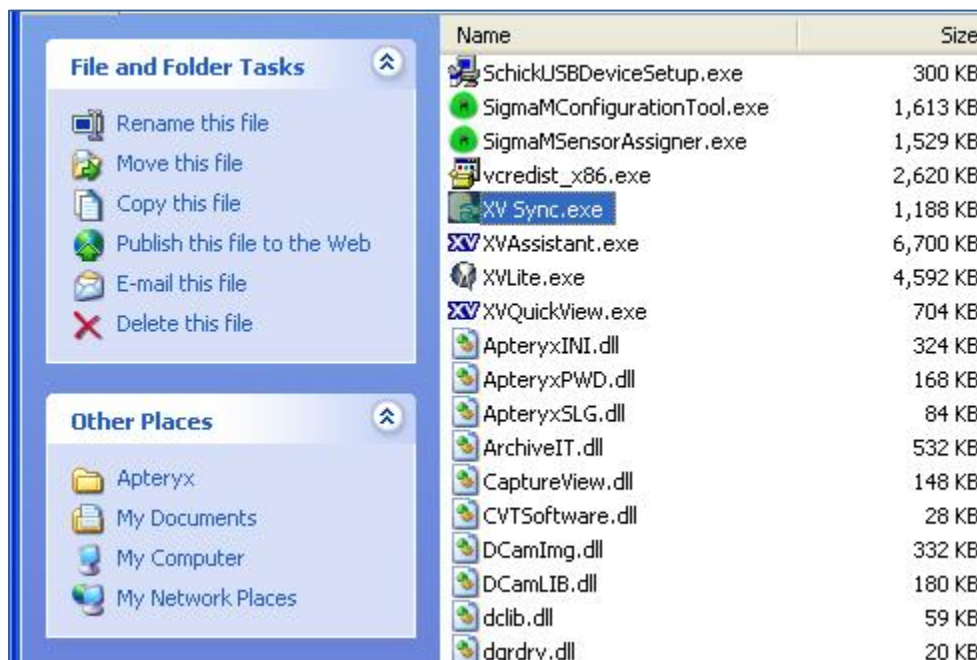


Refer to [Appendix E: XV Sync™ Performance Optimization](#) to complete the Image Volume Worksheet that can assist Apteryx, Inc. in making recommendations to optimize the performance of your implementation.

Pre-Installation Instructions

XV Sync™ is included as an add-on application on the XrayVision® Install CD so it may already be installed as a trial version. To verify:

1. Check the Apteryx Imaging install directory on the Server for an executable file called **XV Sync.exe**.



2. If the file does not exist in the Apteryx Install directory, refer to [Installing XV Sync™ on the Server](#) for detailed instructions.
3. If the file exists, there is no need to run the XV Sync™ Installer. Refer to [Upgrading to the Latest Version of XV Sync™](#).

Installing XV Sync™ on the Server

i The XV Sync™ Installer program is provided electronically in a compressed ZIP file either called:

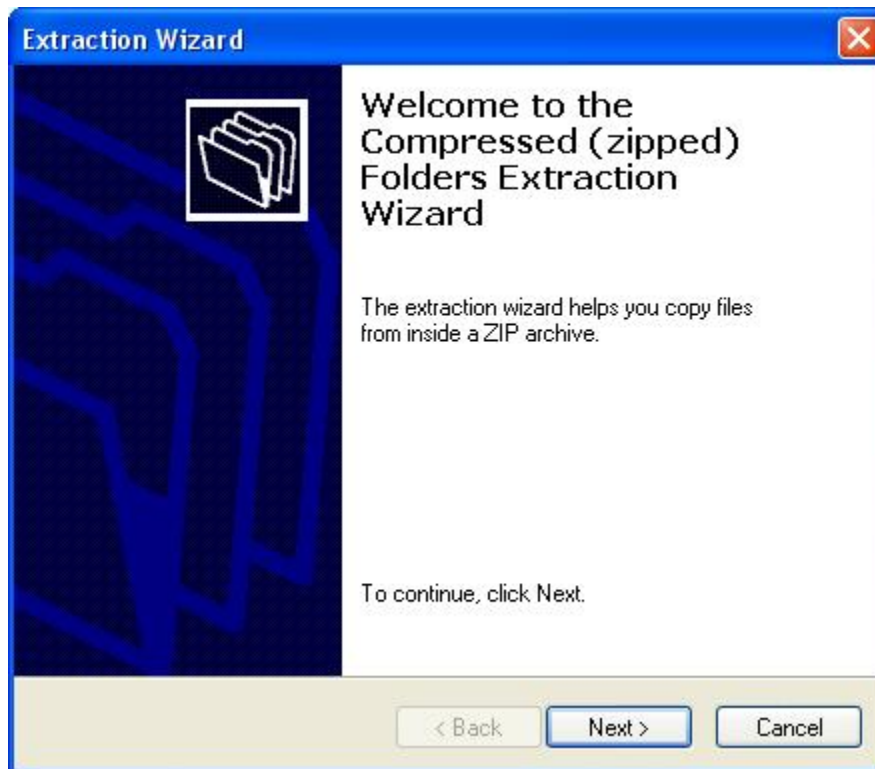
- XVSynPackage.zip, or
- XV_Sync_and_Apteryx_Servicer.zip

The zip file additionally includes an Apteryx Servicer installer program. Refer to [Setting Up XV Sync™ to run with Apteryx Servicer](#) for installation instructions.

1. Right-click on the zip file and select *Extract All*.



2. The Windows Extraction Wizard will launch. Click **Next** to continue with the extraction process.



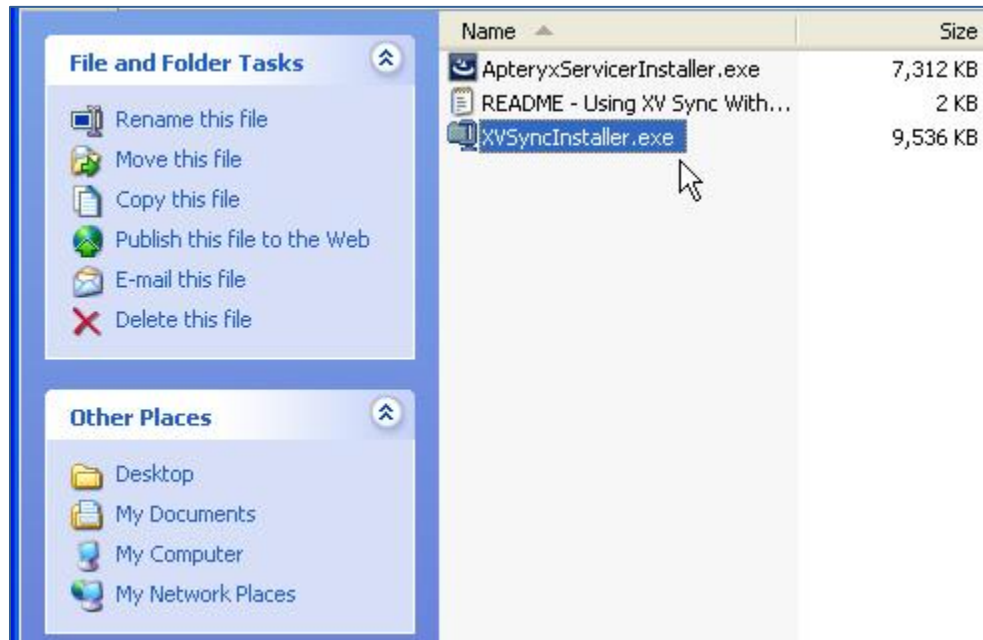
3. Make note of the directory that the compressed files will be extracted to. Click **Next** to continue.



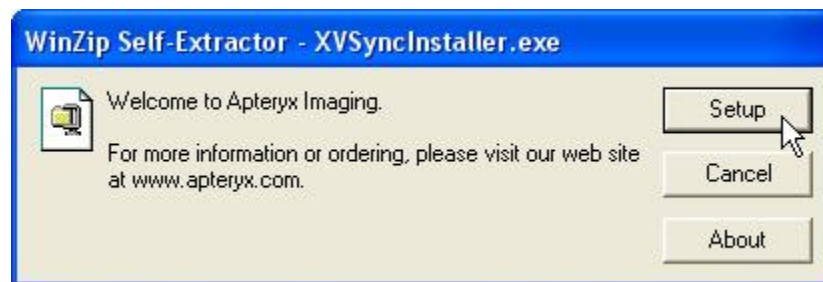
4. The files will be extracted to the specified directory when the extraction completes. Select **Finish** to exit the wizard



5. The extracted files will display in Windows Explorer. Double-click on **XVSyncInstaller.exe** to begin the install process.



6. The WinZip Self-Extractor launches. Click on the **Setup** button.



7. The XV Sync™ Install Wizard initializes and the welcome screen displays. Click **Next** to continue.

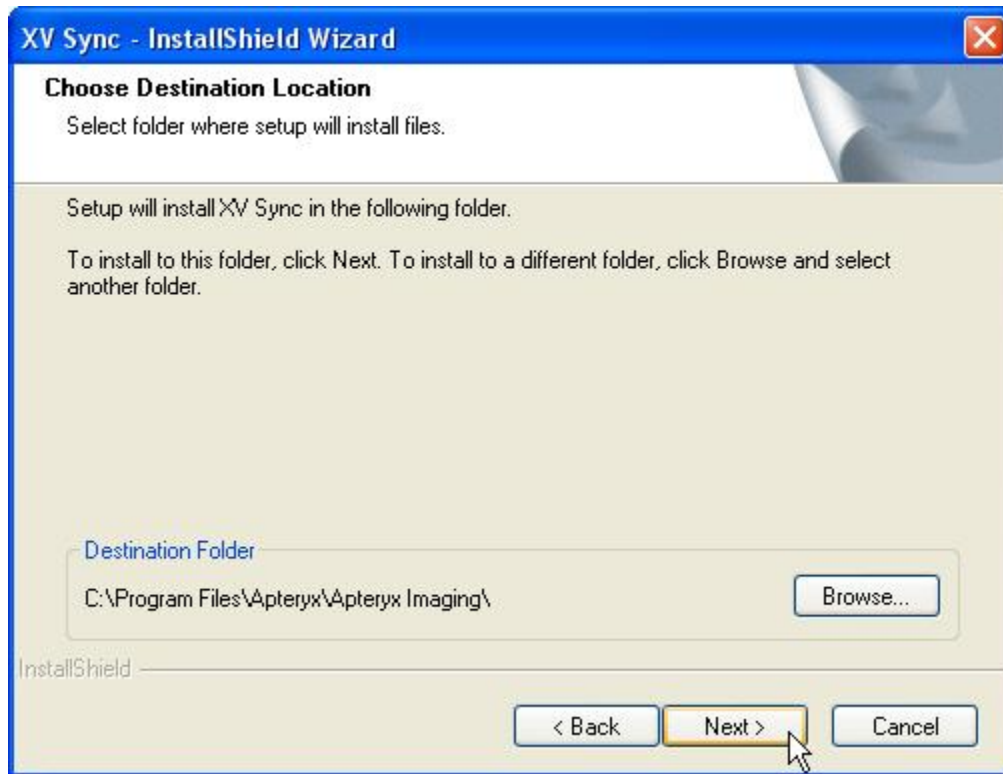


8. The customer information screen displays. Enter information in the 'User Name' and 'Company Name' fields. Click **Next** to continue.

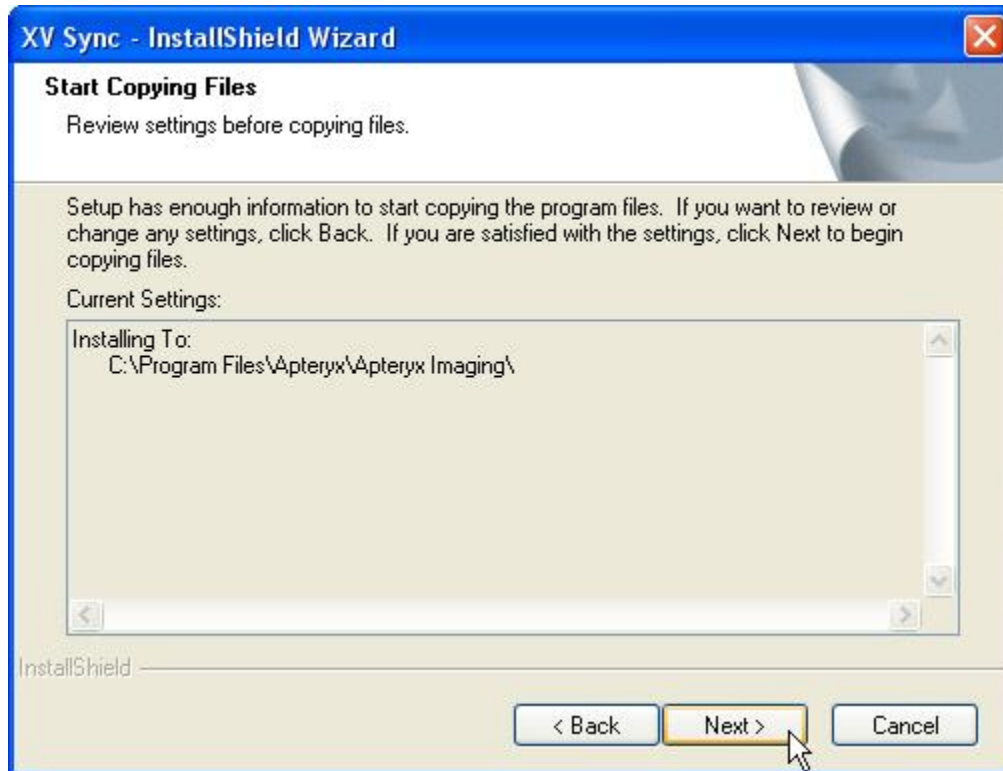


9. The 'Choose Destination Location' screen displays. The installer will attempt to install XV Sync™ in the same folder as XrayVision®, typically *C:\Program Files\Apteryx\Apteryx Imaging*.

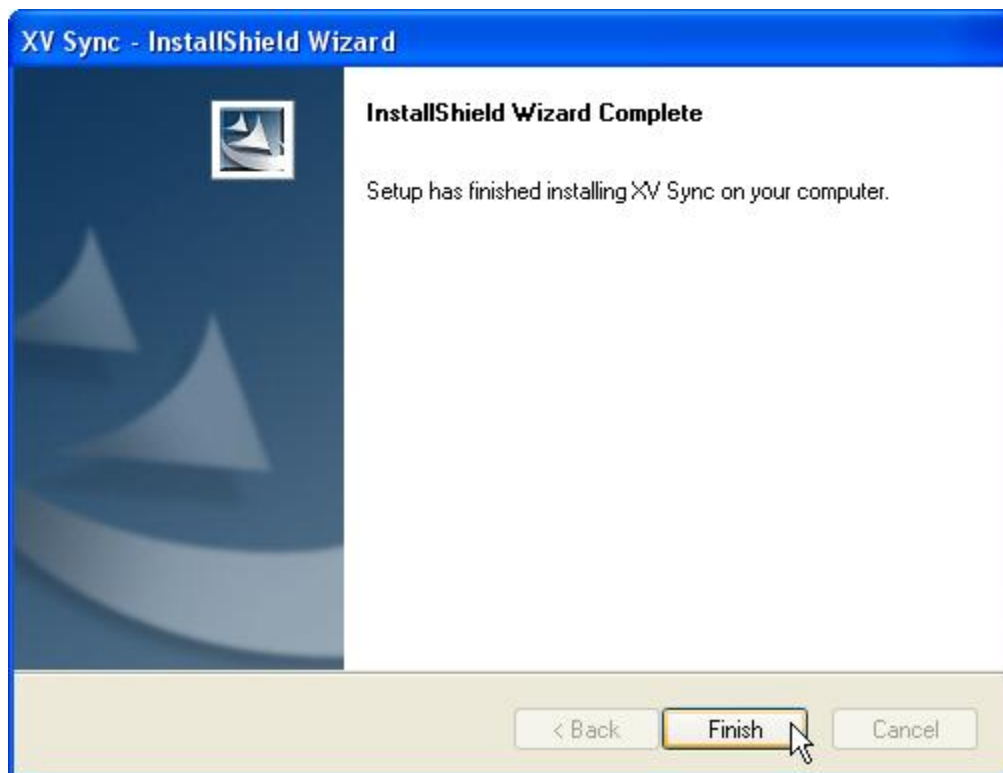
If different, select **Browse** to navigate to the actual location. Click **Next** to continue.



10. Click **Next** to continue with the installation.



11. Once the installation is complete, click on the **Finish** button to close the install wizard.



Upgrading to the Latest Version of XV Sync™

i Follow the directions below to assure the latest version of XV Sync™ is installed on the server.

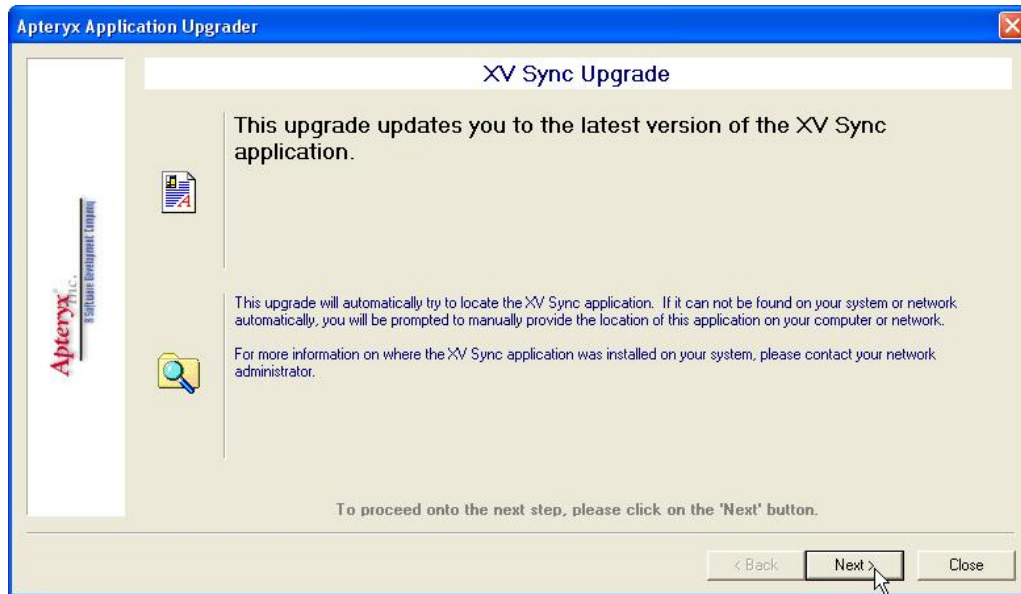
1. Launch any internet browser (Internet Explorer, Mozilla Firefox, etc.) and go to the Apteryx website located at <http://www.apteryx.com>.
2. Navigate to the 'Updates, Add Ons, and Patches' website by clicking on Support > Updates > XrayVision & XV Lite.
3. Select the Component Updates & Add-Ons link.
4. Select the XV Sync Updater link. Click **Run** to download and run the upgrade.



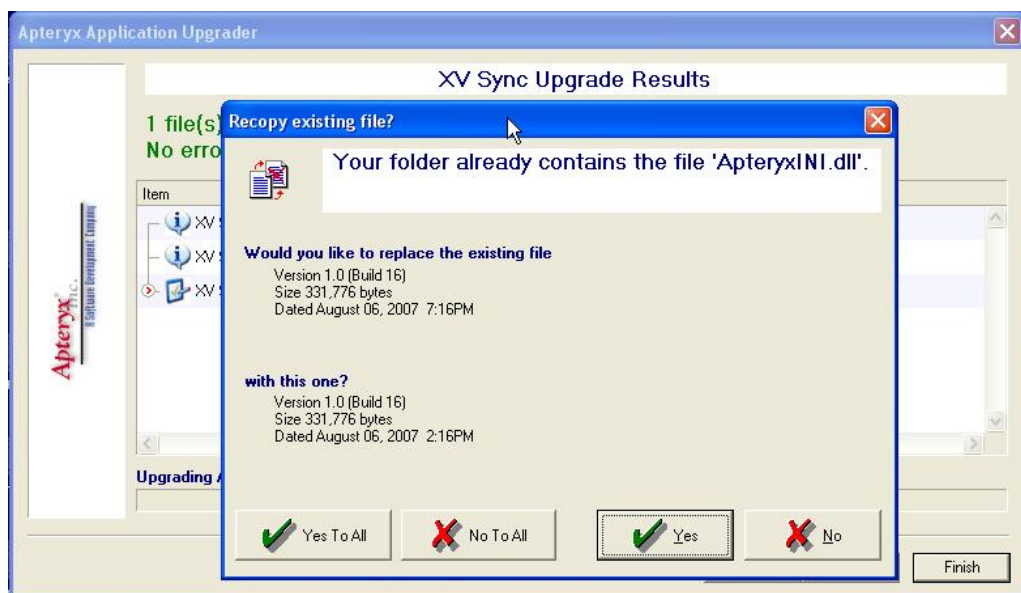
5. A security warning dialog box may display. Click **Run** to continue with the download.



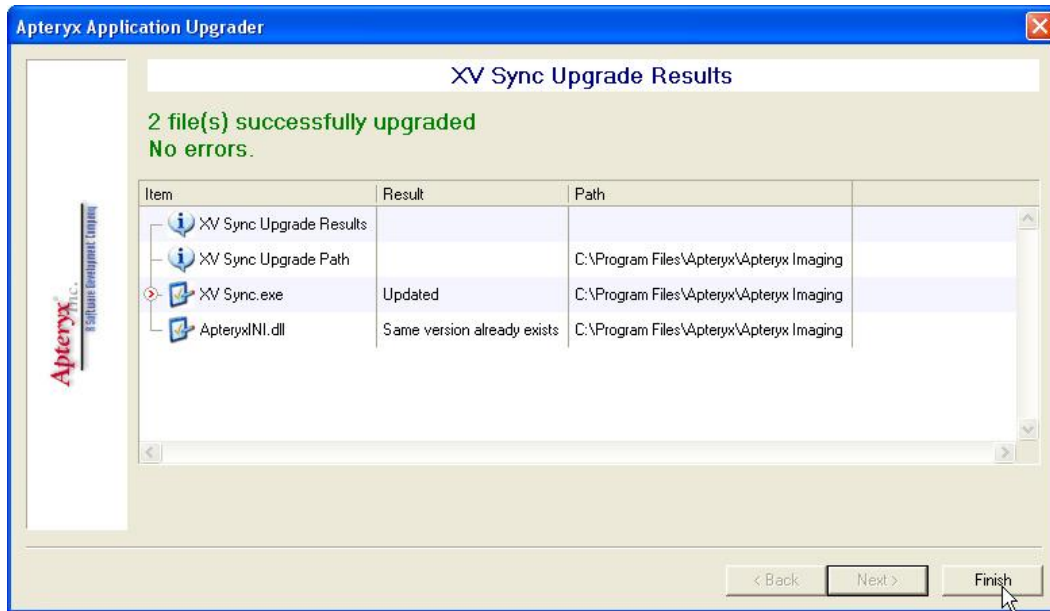
6. Once the download completes, the XV Sync™ Upgrade application will automatically launch. Select **Next** to continue.



7. The upgrader may come across some files that already exist. Click **Yes to All** to replace any existing files.



8. Once the upgrade is complete, click on the **Finish** button to close the upgrade wizard.



Registering XV Sync™ on the Server

i For XV Sync™ to operate, the software must be installed and running on at least two workstations with internet connections and network access to their respective databases. When purchased, the base package contains two registration numbers to cover two locations/servers. Single additional servers can be added with the “XV Sync +1 Server” package available on the Aptyx Store Online.

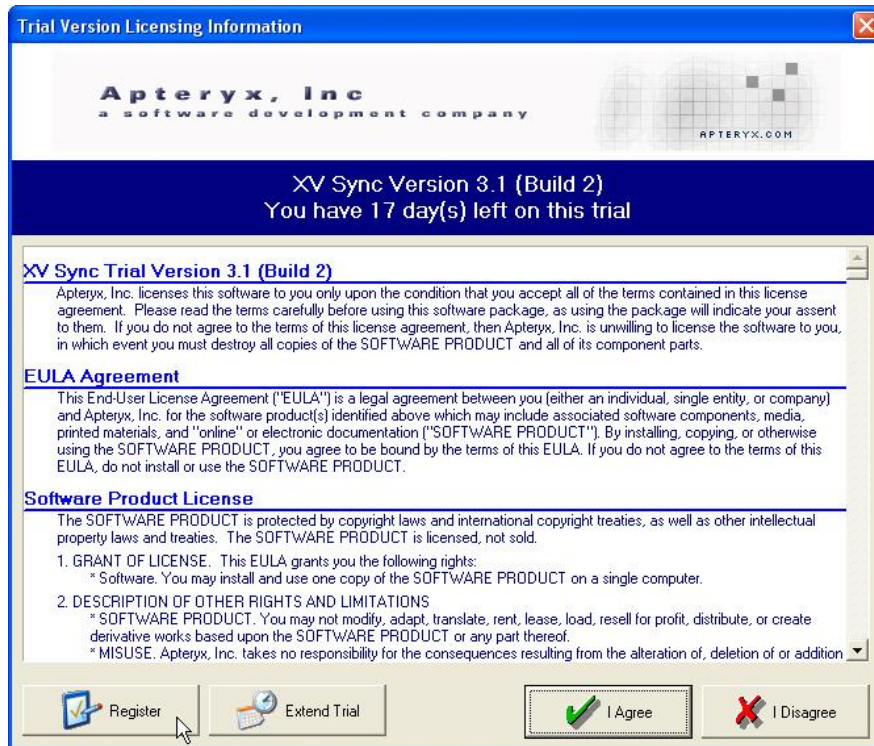
To register XV Sync™:

1. Double-click on the **XV Sync.exe** icon available on the server desktop to launch XV Sync™.



XV Sync.exe

2. The ‘Trial Version Licensing Information’ screen displays. Click on the **Register** button.



3. The registration screen displays. Enter the required information and select the **Get Activation Code** button.

4. Click **Done** to complete the registration process and launch XV Sync™.



SERVER SETUP & CONFIGURATION

Setting up XV Sync™ Preferences and Interface Options

i In order for other XV Sync servers to synchronize with the sync server being configured, at minimum an administrator must specify the path to the XrayVision® patient database and provide a name for the sync server.

1. From the navigation toolbar on the left, select **Preferences** to open and configure the 'XV Sync Options' screen.

2. Complete the following fields:
 - a. 'Database Path' (required) - Verify that the folder path defined in the field is pointing to the \Patients\ folder of Apteryx imaging software installed on the sync server (typically C:\Program Files\Apteryx\Apteryx Imaging\Patients).

If not, select the folder icon (📁) to browse and select the actual database path to the \Patients\ folder in the Apteryx install directory.
 - b. 'XV Sync Name' (required) - Enter a unique name in the text box to identify the sync server (e.g. "Child1").
 - c. 'Communication Key' (Optional) - If desired, select **Auto Generate** to create a unique key for additional communication security.

Note: The 'XV Sync Name' and 'Communication Key' generated will need to be supplied to administrators configuring other sync servers to allow connections.
 - d. 'Packet Size Selection' (Optional) – **Note:** The default size specified in XV Sync™ is 100.0 KB. Increasing the packet size may task the network's bandwidth.

- e. 'Email Notifications' (Optional) – XV Sync™ can be configured to send useful email notifications that inform administrators when synchronizations with other sync servers start and complete. Additionally, a 'sync error' email notification will be sent whenever synchronizations fail to complete. Refer to [Appendix D: XV Sync™ Email Notifications](#) for more information and detailed instructions.
- f. 'Multi-Homed Options' (Optional) – If a sync server has multiple internet connections, enter the primary 'IP' and 'Port' to be utilized for outgoing communications.
- g. 'Global ID Matching Options' (Optional) –
 - i. **Enable Global ID Matching** allows the Child Sync Server to merge patient files from other sources that match by one of the following options:
 - ID Number only
 - Social Security (SS) Number only
 - Both ID and SS Number

Patients that match on the selected criteria will be merged under the patient file from the last remote sync server.



Warning: Enable this option ONLY if the entire organization utilizes a global ID scheme for patient identification. If not, images from different patients may be merged under one patient on the Master Sync Server.

- ii. **Prevent data Wiping** – Option is enabled by default to avoid replacing non-global demographic information with blank content during a patient merge.



Warning: It is strongly recommended not to disable this option. Contact Apteryx Support at **877-APTERYX (877-278-3799)** to learn about possible impacts to patient information during a merge.

3. Click **OK** to save the changes made to the 'XV Sync Options' screen.

Setting up the XV Sync™ Server Reception Settings



The sync server now needs to be setup to allow connections from other sync servers.

1. From the navigation toolbar on the left, select **Server Connection Settings > Edit My Server Reception Settings** to open the 'Image Reception Settings' screen.

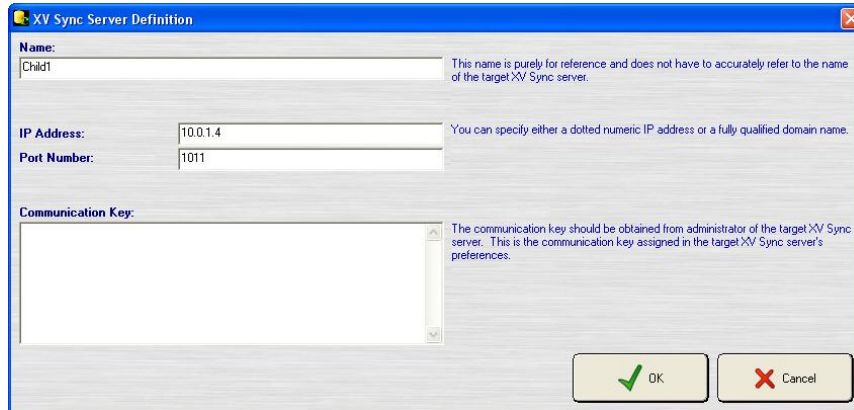
Complete the following fields:

- a. **Enable receiving connections from other computers** – Select this option to enable connections from the other sync servers.
 - b. **'My IP Address'** – XV Sync™ utilizes TCP/IP to communicate across a network. Enter the local IP address of the sync server in this field.
 - c. **'My Port Number'** – The Default communication port is “1011”. Consult with a network administrator to determine if a different port should be utilized.
 - d. **Add received images to the 'To Store' database (optional)** – Enabling this feature allows a sync server to store images received from a remote sync server to the local ToStoreDB, a special index that lists newly acquired images. This feature is useful if the sync server will be used to forward images received from one remote location on to another.
 - e. **Enable logging of communications** – Enable this feature to allow the software to create communication log files. Refer to [Appendix C: XV Sync™ Communication Logs](#) for detailed information.
 - **Flush all log writes** – If enabled, all log entries will be written immediately to the log file, instead of being written in chunks. *With this option disabled, an application failure may prevent a complete log file from being generated.*
 - **Verbose logging** – If enabled, log entries will include the maximum amount of logging information. This will significantly increase the size of log files, but is useful for troubleshooting. This option may impact application performance.
 - f. **Enable Master log of connections** – Enable this feature to allow the software to create a master log of all connections to the sync server.
2. Click **OK** to save the changes made to the 'Image Reception Settings' screen.

Configuring Target Sync Servers in XV Sync™

i The sync server now needs to be enabled to connect to sync servers at remote locations.

1. From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization > Edit Target XV Sync Servers** to open the 'XV Sync Servers' screen.
2. Click on **Add Server**. The 'XV Sync Server Definition' screen displays.



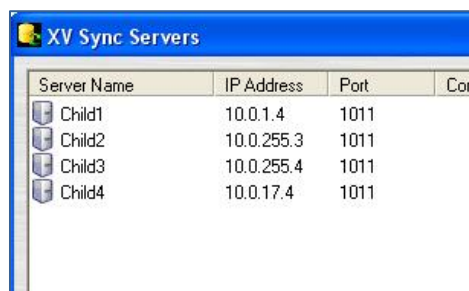
The dialog box titled "XV Sync Server Definition" contains the following fields and instructions:

- Name:** A text box containing "Child1". A note states: "This name is purely for reference and does not have to accurately refer to the name of the target XV Sync server."
- IP Address:** A text box containing "10.0.1.4". A note states: "You can specify either a dotted numeric IP address or a fully qualified domain name."
- Port Number:** A text box containing "1011".
- Communication Key:** A large empty text box. A note states: "The communication key should be obtained from administrator of the target XV Sync server. This is the communication key assigned in the target XV Sync server's preferences."

At the bottom right are "OK" and "Cancel" buttons.

Complete the following fields:

- a. 'Name' – Enter a name to identify the remote sync server.
 - b. 'IP Address' – XV Sync™ utilizes TCP/IP to communicate across a network. Enter the IP address or the domain name (computer name) of the remote sync server.
 - c. 'Port Number' – The Default communication port is "1011". Consult with a network administrator at the remote location to determine if a different port should be utilized.
 - d. 'Communication Key' (Optional) – If the remote sync server is configured to allow only connections using a unique communication key, the key must be obtained from the location's administrator and entered in the text box provided. *This field is case-sensitive and must be entered exactly as it is on the remote sync server's 'XV Sync Options' screen.*
 - e. Click **OK** to save the changes.
3. Repeat Step 2 above to add additional sync servers.
 4. When complete, the remote sync servers will be listed on the screen.



Server Name	IP Address	Port	Con
Child1	10.0.1.4	1011	
Child2	10.0.255.3	1011	
Child3	10.0.255.4	1011	
Child4	10.0.17.4	1011	

5. Click **OK** to return to the main XV Sync™ screen.

GETTING STARTED WITH XV SYNC™

Getting Started: Overview

i This section describes the steps needed to prepare an organization that is implementing XV Sync™ and all sync servers and related patient databases to a “ready” state before initiating synchronization schedules to forward & retrieve patient images on desired days/times.

An initial synchronization is only necessary if the organization requires equivalent XrayVision® patient databases at all their sync server locations.

Manually Establishing Equivalent Patient Databases (Optional)

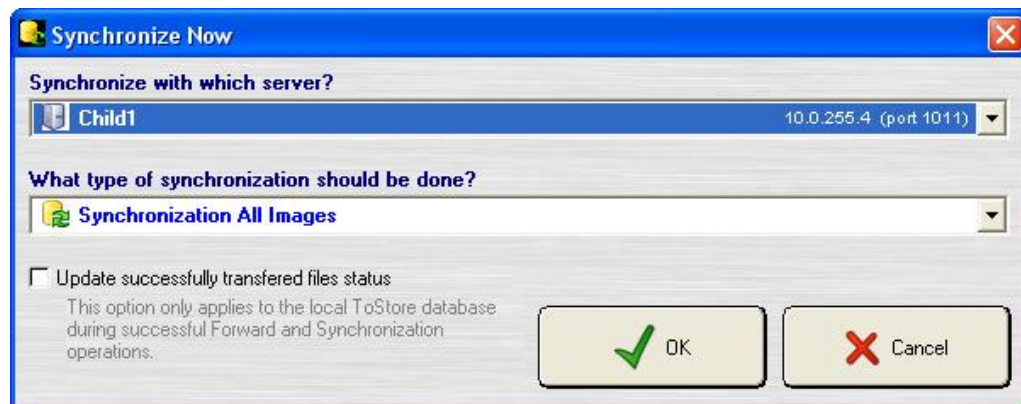
i If an organization requires equivalent patient databases at all sync server locations, Apteryx, Inc. recommends performing an on-demand, manual synchronization before subsequent automated synchronizations are scheduled in the software.

The synchronization should be initiated from one sync server (e.g. the sync server at a CBO) that has all the remote locations configured as target sync servers.

⚠ Warning: The best approach to manually synchronizing the patient databases depends on the number of sync servers and size of each patient database in the implementation. It may be more practical to copy/deliver a composite database to sync server locations on hard disk (DVD, external HD, etc.) rather than performing a remote sync.

A. Manually Synchronizing Two (2) Sync Server Locations:

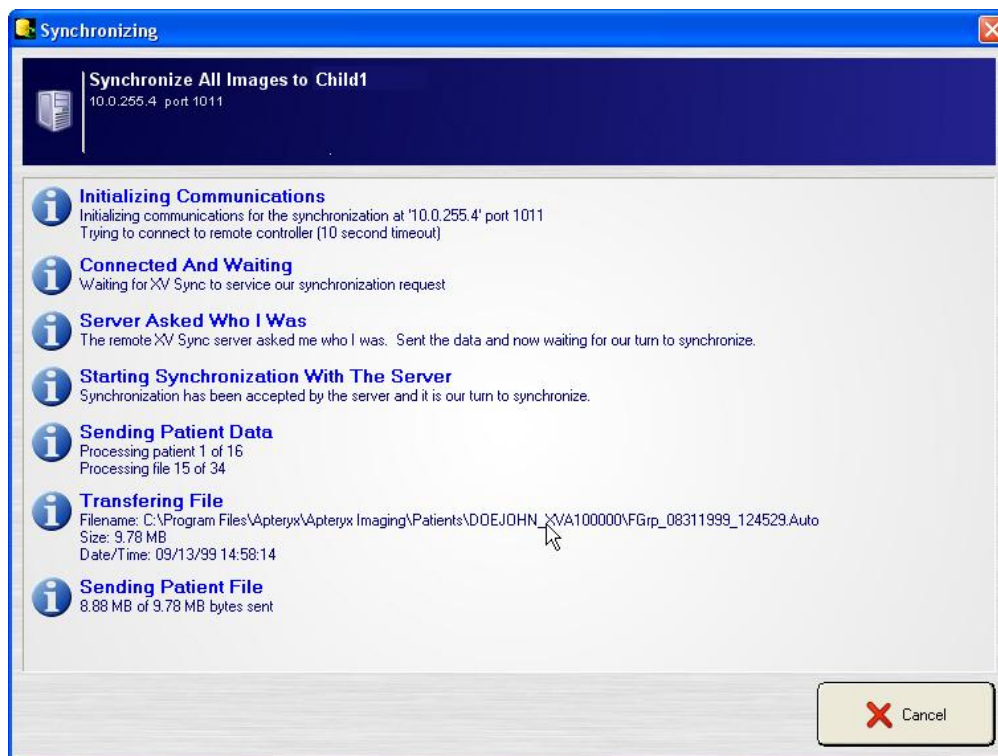
1. From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization > Synchronize Now**. The ‘Synchronize Now’ dialog box displays.



2. Select the remote sync server to be targeted from the ‘Synchronize with which server’ drop-down field.
3. Click on the ‘What type of synchronization should be done’ drop-down arrow and select **Synchronization All Images**.



4. Click on **OK** to initiate the synchronization. A status window displays the progress of the synchronization.

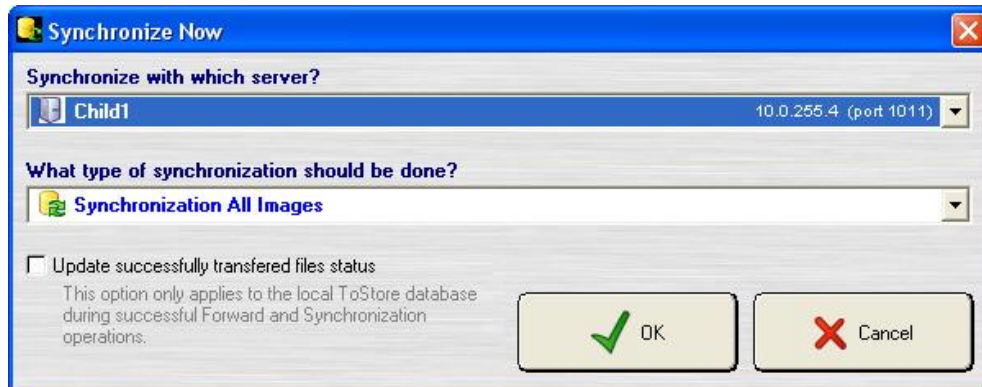


5. When complete repeat Steps 2-4 above for the additional sync servers listed.

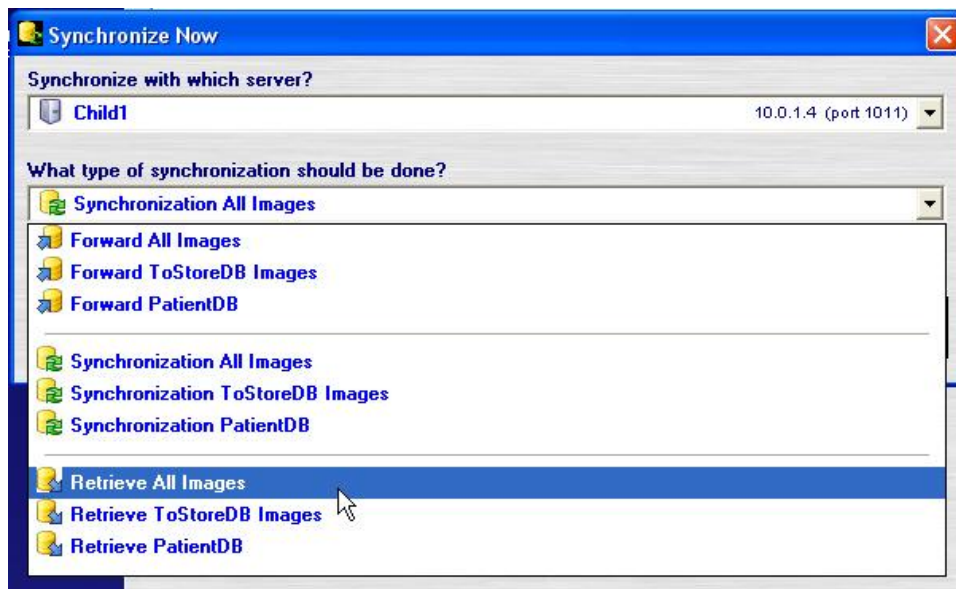
B. Manually Synchronizing Three (3) or More Sync Server Locations:

Apteryx, Inc. recommends manually initiating 'retrieve from' actions to build a composite database of all sites on one sync server. Subsequent 'forward to' actions manually initiated from the master sync server will send the composite database to each sync server location.

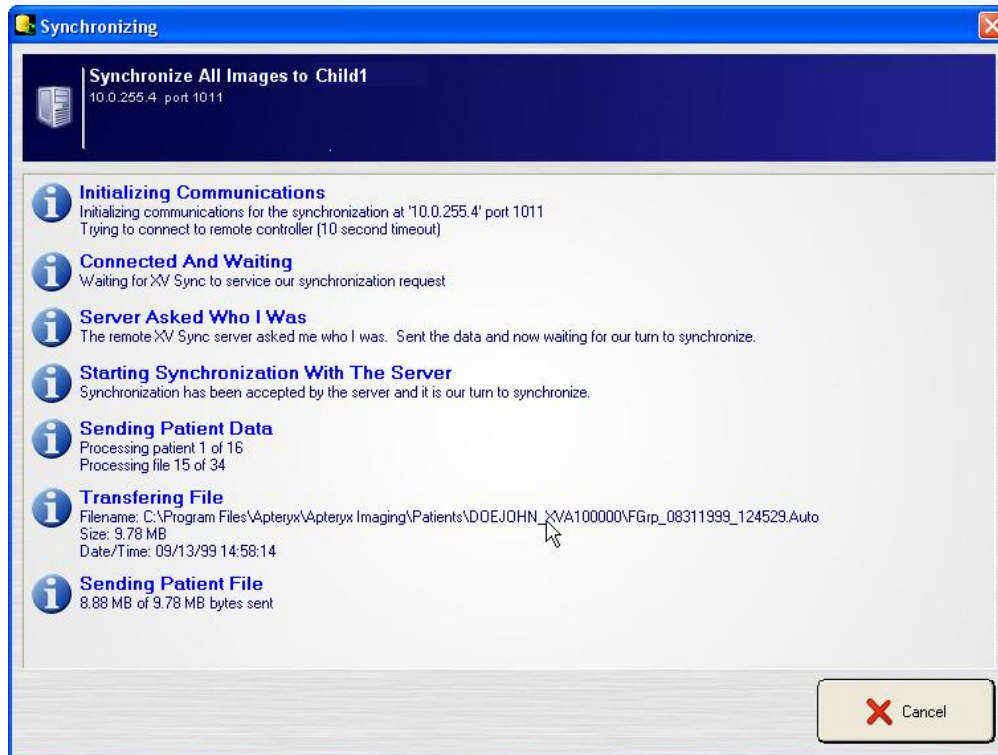
1. From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization > Synchronize Now**. The 'Synchronize Now' dialog box displays.



2. Select the remote sync server to be targeted from the 'Synchronize with which server' drop-down field.
3. Click on the 'What type of synchronization should be done' drop-down arrow and select **Retrieve All Images**.



4. Click on **OK** to initiate the synchronization. A status window displays the progress of the synchronization.



- When complete repeat Steps 2-4 above for the additional sync servers listed. When done, a composite of all database will exist on the local sync server.
- Repeat Steps 2-5, except this time select **Forward all Images** to send the local, composite database to each remote sync server location. When done, the composite database will exist at every location.



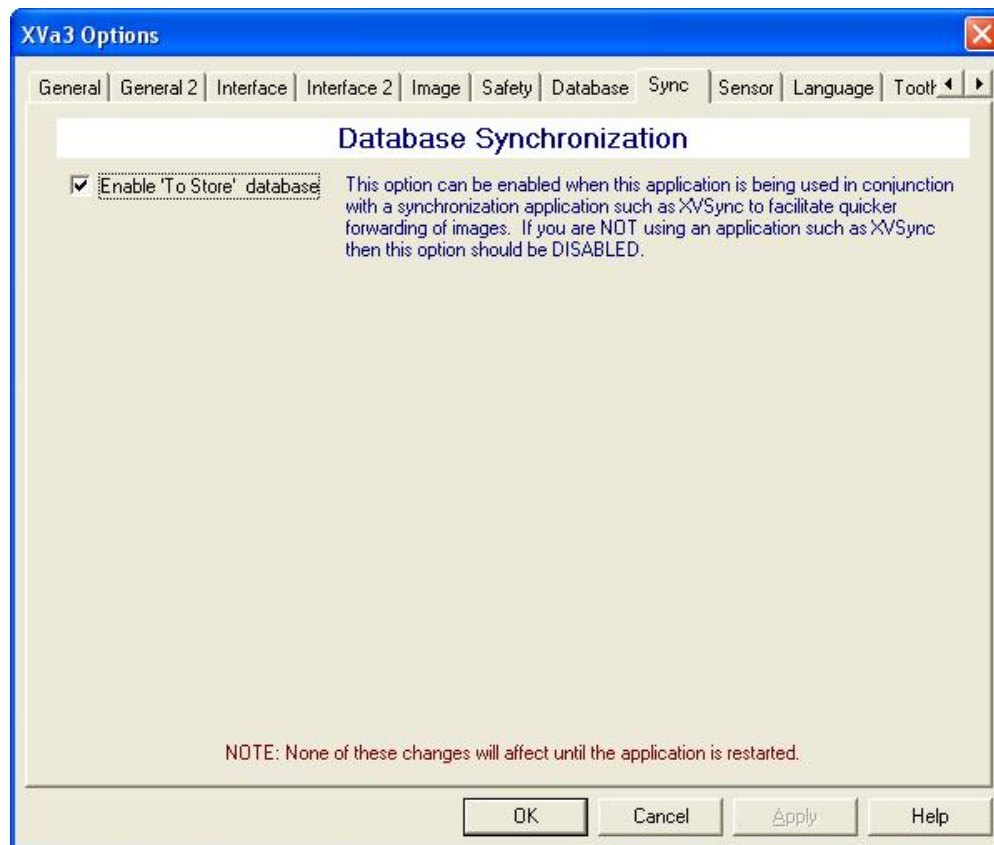
- Click **OK** when complete to exit back to the main screen.

Enabling the 'To Store' Database in XrayVision®

i The 'To Store' database feature in XrayVision®, when enabled, automatically adds all newly acquired images to an index called the 'ToStoreDB'. The ToStoreDB adds efficiency to the synchronization process by avoiding the need to query the entire patient database on each sync server to determine which images are new.

! Warning: Software settings are specific to each workstation; therefore, perform the steps below on all capture stations at each location that runs XrayVision®. This will assure all newly acquired images are added to the location's ToStoreDB.

1. Launch XrayVision™.
2. From the menu select *Tools > Options* to open the 'XV Options' dialog box.
3. Select the 'Sync' tab and click on **Enable 'To Store' database**.



4. Click **OK** to save the changes.

Configuring Synchronization Schedules

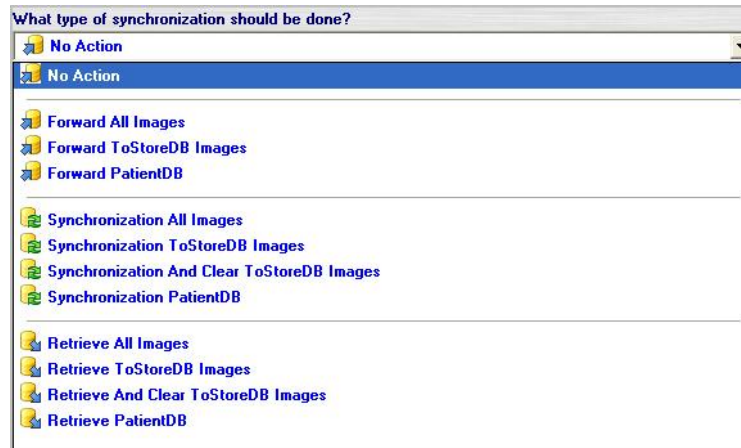
i Although periodic synchronization schedules can be created in XV Sync™, Apteryx, Inc. recommends creating schedules to initiate synchronizations on specific days of the week and time of day when WAN bandwidth is optimal.

1. From the navigation toolbar on the left, select **XV Sync Servers and Image Synchronization > Edit Synchronization Schedule** to open 'XV Sync Schedule' screen.
2. Scroll down to the scheduling section for the desired day.

3. To create a sync schedule, complete the following fields:
 - a. 'Do synchronization at' - Select the desired synchronization time for the specific day.
 - b. 'Perform the following synchronization actions' – Select **Add Action** to open the 'Synchronize Action' dialog box.

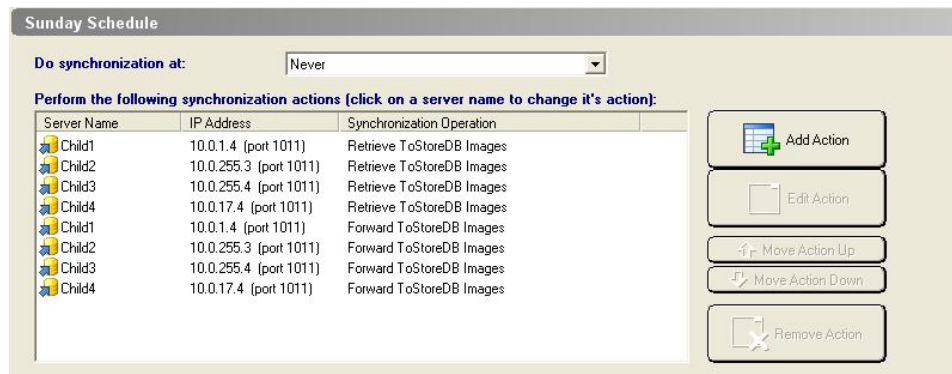
Complete the following to create a synchronization action:

- i. 'Synchronize with which server' - Select the name of the remote sync server (e.g. 'Child1') to be targeted.
- ii. 'What type of synchronization should be done' –



Select the appropriate synchronization operation. The selection made depends on the goal of the organization's XV Sync™ implementation. Refer to [Appendix B: Synchronization Operations & Options](#) for detailed information on each option.

- iii. Click **OK** to save the changes and return to the sync schedule.
- c. Repeat Step 3b above to add actions for any additional sync server. When complete, the schedule will display a sync operation for each remote sync server.



Note: Sync operations will initiate at the specified time and in the order listed on the schedule.

3. Repeat Step 2-3 to schedule synchronizations for each day desired.
4. Click on **OK** to save changes and return to the main screen.

Setting up XV Sync™ to run with Apteryx Servicer

In order for synchronizations to occur, the XV Sync™ process must be running on the sync servers. XV Sync™ can be added to Windows Startup folder; however, this does not assure that the application will be running. For example, if a user logs out of Windows the application will be ended and sync servers will be unable to connect.

Apteryx Servicer has the ability to assure applications that always need to be running are kept "alive" as a Windows Service, rather than relying on the Startup option. It also has the ability to periodically check that targeted applications are running and restart them if they are closed unexpectedly.

Follow the instructions below to install Apteryx Servicer and to add XV Sync™ as a targeted application to keep alive.

A. Installing Apteryx Servicer

Recall that the XV Sync™ Installer program was provided electronically in a compressed ZIP file either called:

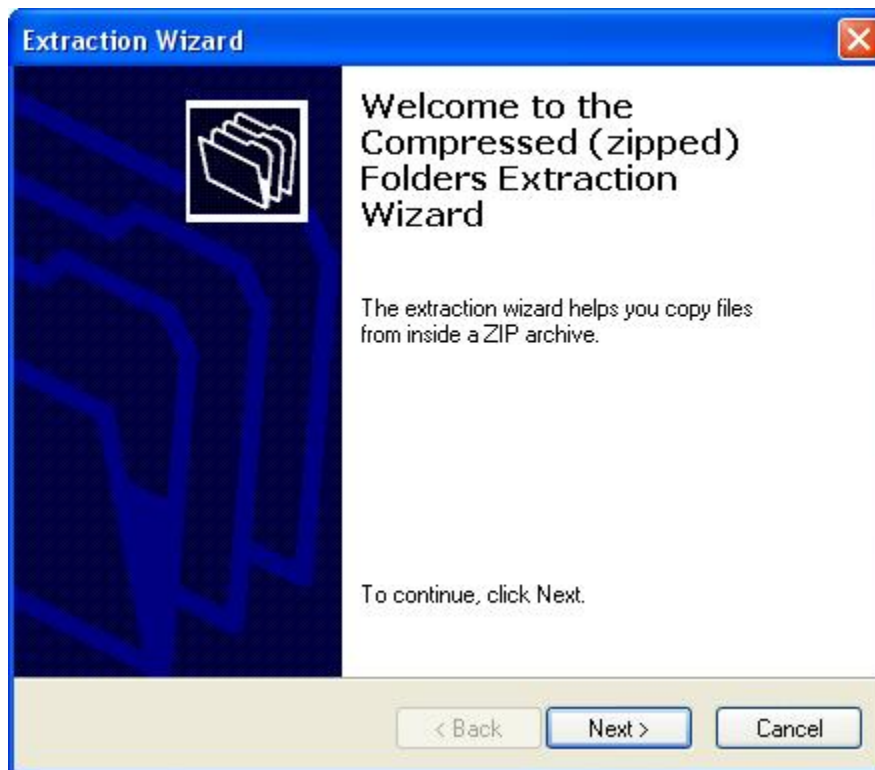
- XVSynPackage.zip, or
- XV_Sync_and_Apteryx_Servicer.zip

The zip file additionally includes the Apteryx Servicer installer program.

1. Right-click on the zip file and select *Extract All*.



2. The Windows Extraction Wizard will launch. Click **Next** to continue with the extraction process.



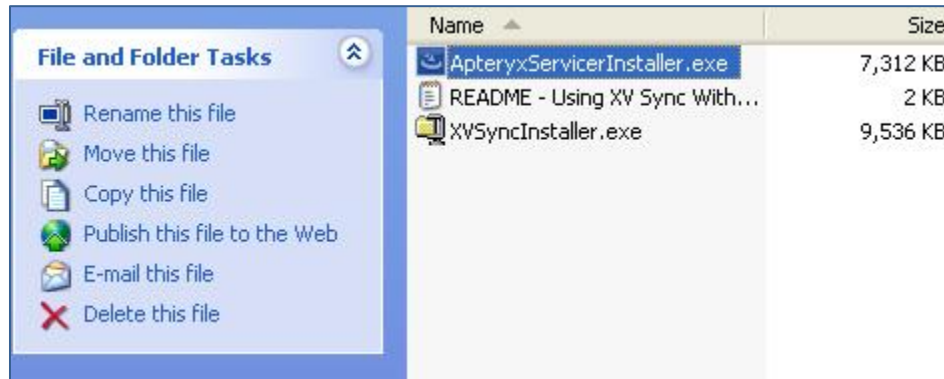
3. Make note of the directory that the compressed files will be extracted to. Click **Next** to continue.



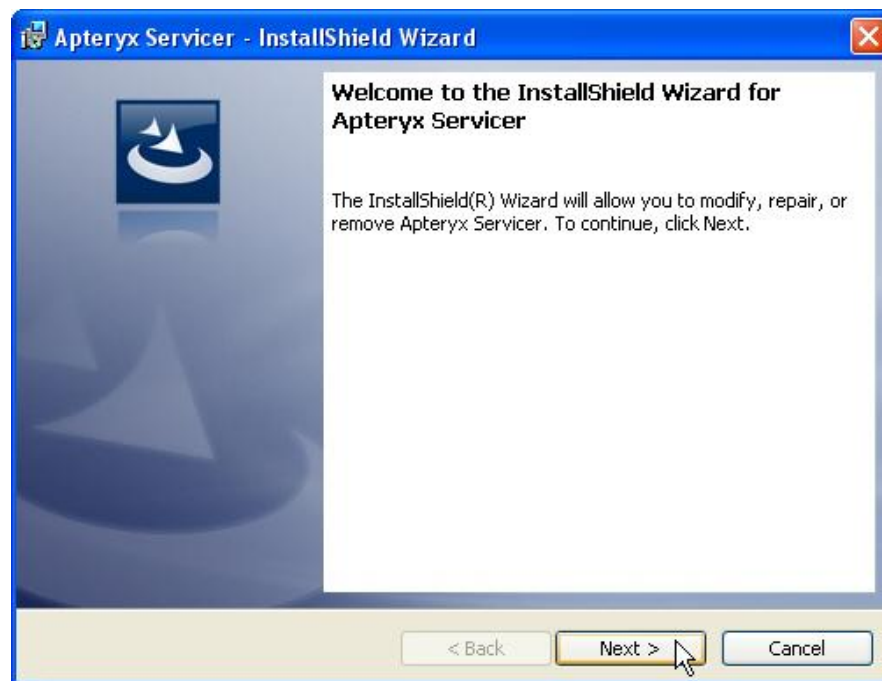
4. The files will be extracted to the specified directory when the extraction completes. Select **Finish** to exit the wizard



5. The extracted files will display in Windows Explorer. Double-click on **ApteryxServicerInstaller.exe** to begin the install process.



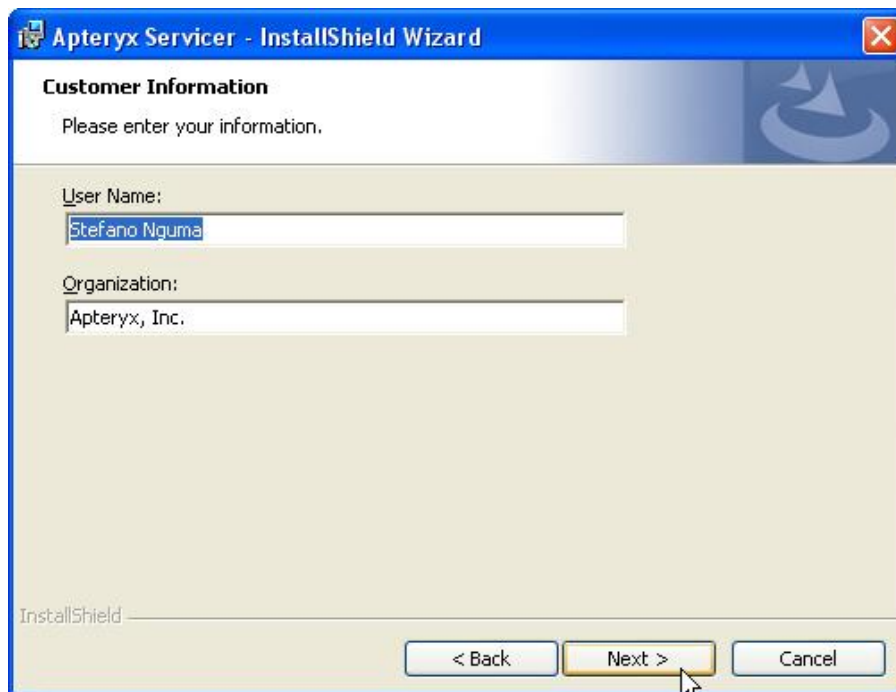
6. The Apteryx Servicer Install Wizard initializes and the welcome screen displays. Click **Next** to continue.



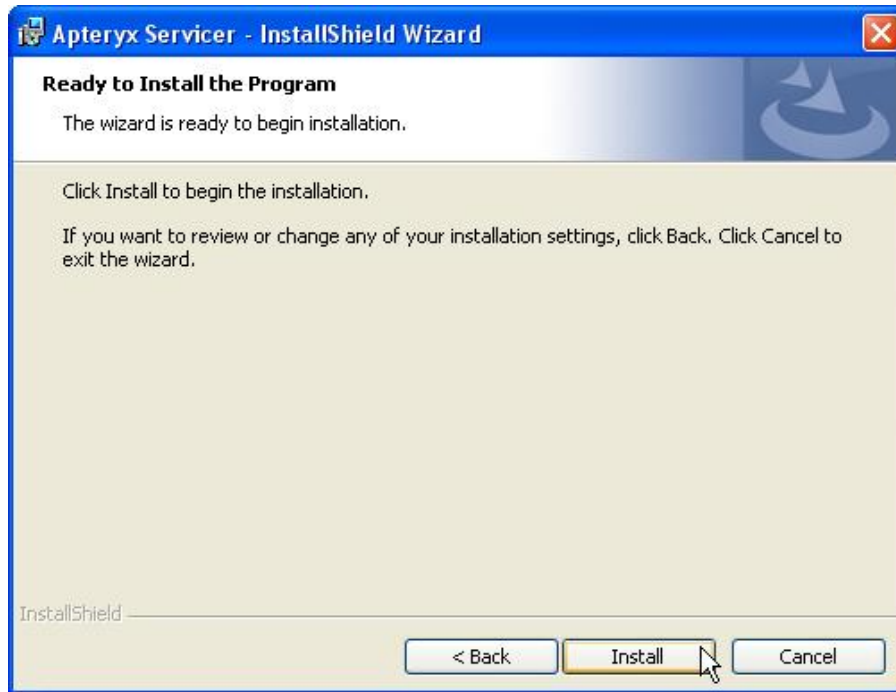
7. The License Agreement displays. Read and accept the terms of the license agreement and click **Next** to continue.



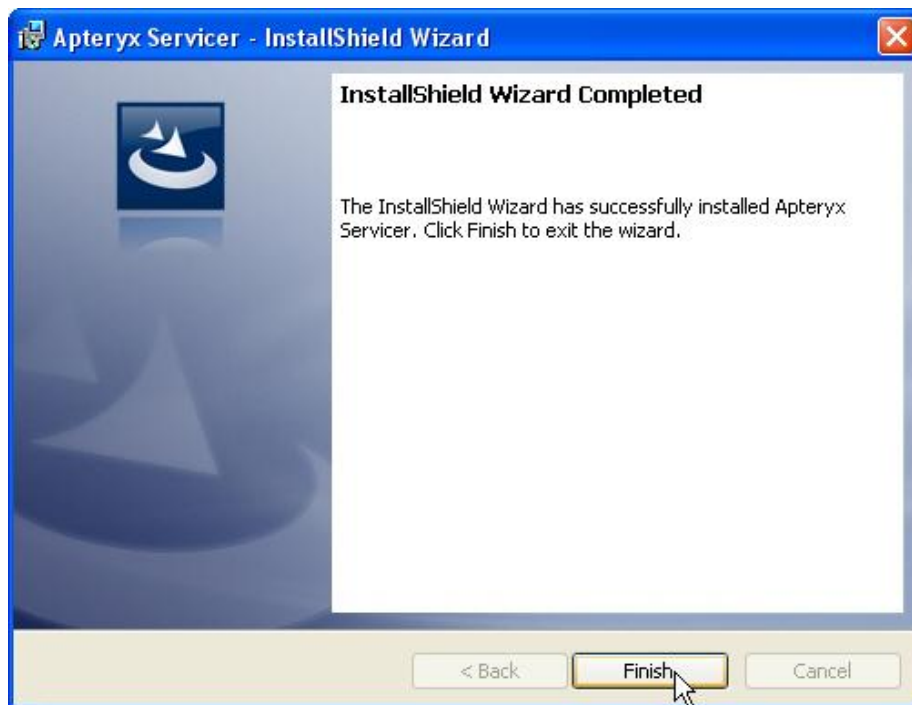
8. The customer information screen displays. Enter information in the 'User Name' and 'Organization' fields. Click **Next** to continue.



9. Click **Install** to continue with the installation.



10. When the installation is complete, click **Finish** to close the install wizard.

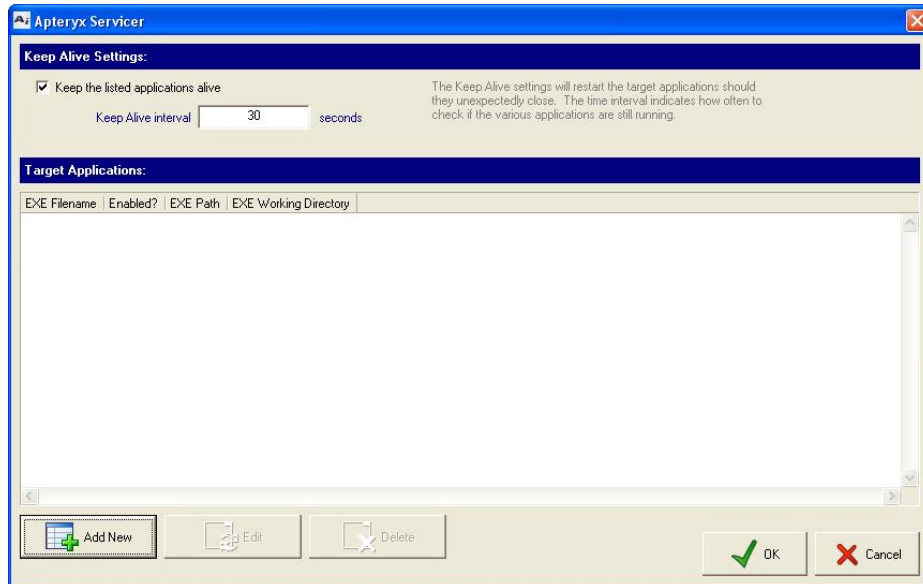


B. Adding XV Sync™ to the “Keep Alive” List

Follow the steps below to add XV Sync™ to Apteryx Servicer’s list of “Keep Alive” applications:

1. From the Windows Start menu, select **Control Panel**.

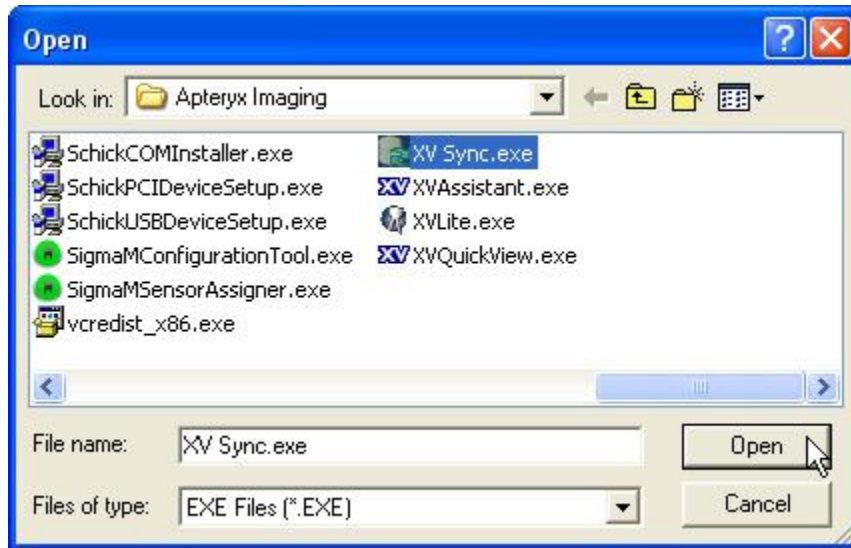
2. **Note:** Apteryx Servicer cannot be accessed via the Control Panel if the default 'Category View' is enabled. If it is, switch to the standard view by selecting the link, Switch to Classic View.
3. Double-Click on **Apteryx Servicer** to launch the application.



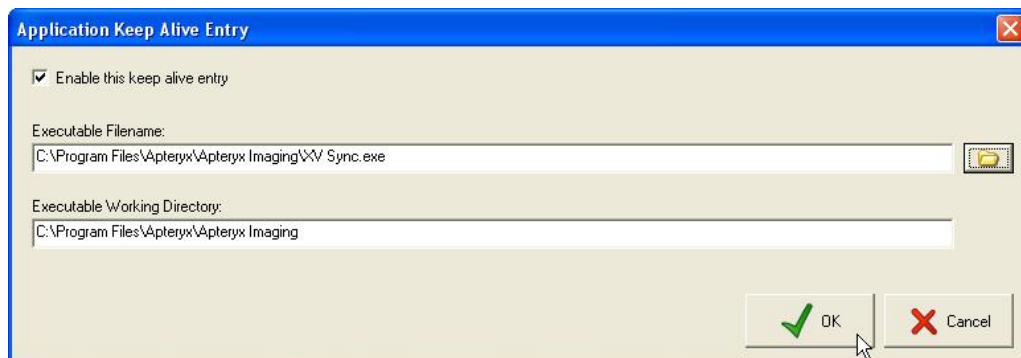
4. At the bottom-left, double-click on **Add New**. The 'Application Keep Alive Entry' dialog box displays.



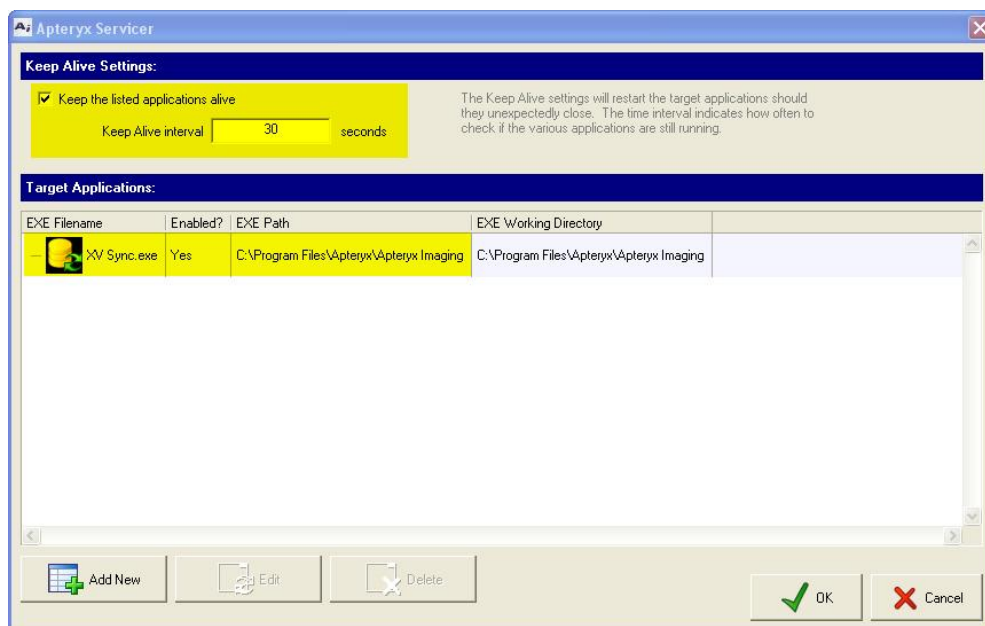
5. Select the browse icon () to the right of the 'Executable Filename' field. Locate the XV Sync.exe executable file. Once selected, click on **Open** to add the application.



6. Select **Enable this keep alive entry** and then click on **OK** to exit the 'Application Keep Alive Entry' dialog box.



7. XV Sync.exe is now listed as a Target Application. Ensure that the **Keep the listed applications alive setting** is enabled. Adjust the interval as desired.



8. Click **OK** to exit Apteryx Servicer.

XV Sync™ will now run as a Windows Service and Apteryx Servicer will ensure that the application is always running, ready to communicate with other sync servers.

XV SYNC™ TOOLS AND UTILITIES

Tools and Utilities: Overview

XV Sync™ includes reconciliation tools and utilities that give administrators the ability to create reconciliation log files used to check for differences between patient databases on sync servers. The utilities are useful in determining if all patient files transferred correctly to a remote sync server.

Additionally, XV Sync™ includes a utility that administrators can use to view current patient records or add additional records to the ToStoreDB.

Create a Reconciliation File

 A reconciliation file provides an administrator the ability to check the patient database on their sync server against a database on a remote sync server. An administrator from one location can provide a reconciliation file to another sync server location in order for them to run and check against their database. Checking the reconciliation file provides a line-by-line, detailed report on each patient record that failed to transfer from the originating sync server.

To create a reconciliation file:

1. Select **Tools And Utilities > Reconciliation Options > Create A Reconciliation File**. A 'Save As' dialog box pops up.



2. Click on the 'Save in' drop-down to select a location to save the reconciliation file to.
3. Accept the default name, "XVSyncReconFile.XVSYNCRECON", or enter a new name in the 'File name' field.
4. Click on **Save** to create the reconciliation file in the specified location.

5. Provide the reconcile file generated to an administrator at a remote sync server location to check against their patient database.

Note: Automate the 'create and send' reconcile file process by configuring Email Notifications in 'XV Sync Options' and using the **Create And Email A Reconciliation File** option as described below.

Create and Email a Reconciliation File

i If Email Notifications are configured in XV Sync™ Preferences, an administrator can create and send a reconciliation file to one or more administrators on their mailing list in one step.

i This option will not be available unless Email Notification is configured in 'XV Sync Options'. Refer to [Appendix D: XV Sync™ Email Notifications](#) for detailed information on configuring outgoing mail server (SMTP) settings and recipient list.

To create and email a reconcile file:

1. Select **Tools And Utilities > Reconciliation Options > Create and Email a Reconciliation File**.
2. A dialog box appears to confirm the requested action. Click **Yes** to continue.



3. The recipient(s) added to the Email Notification's Email Address List in XV Sync™ 'XV Sync Options' will then receive an email with a reconcile file attachment.

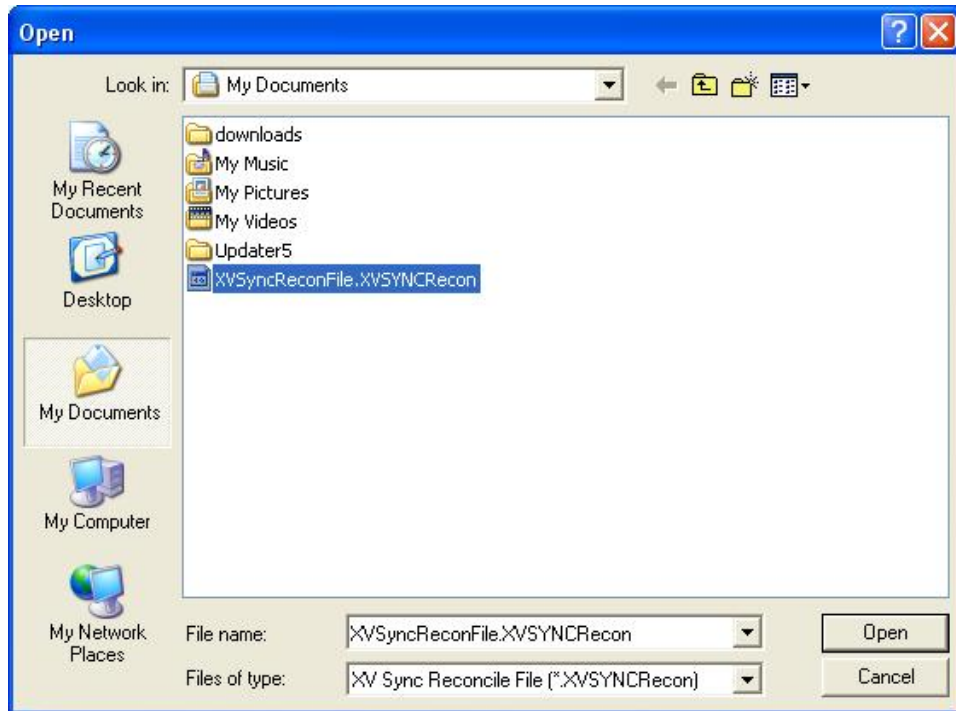
Note: This function can be fully automated to email a reconciliation file to a remote sync server after every synchronization completes by enabling the **Automatically send reconcile files after a synchronization** in 'XV Sync Options'. Refer to [Appendix D: Email Notifications](#) for information.

Checking Reconciliation Files

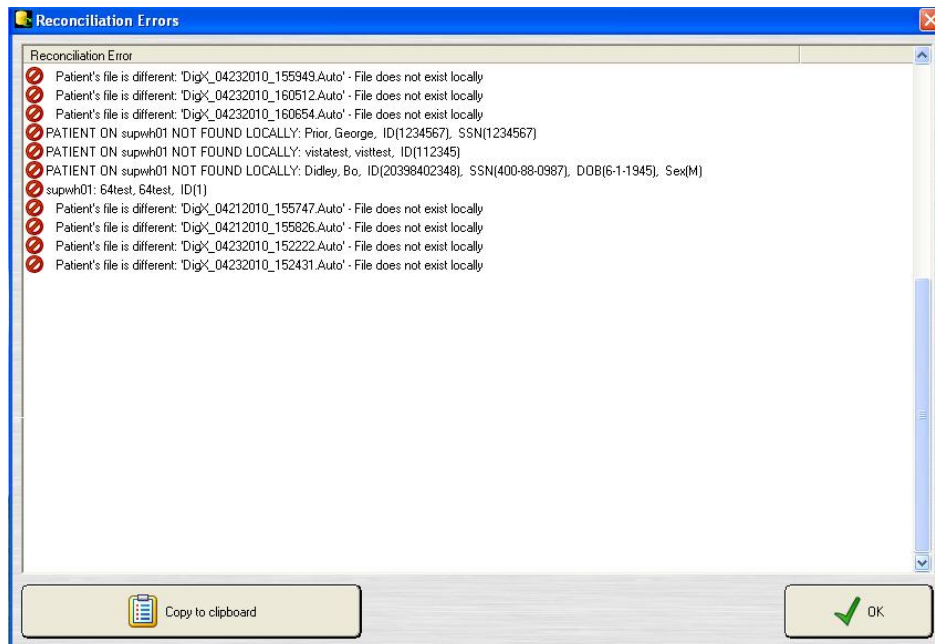
i Checking a reconciliation file provides a line-by-line, detailed report on each patient record that failed to transfer from an originating sync server. An administrator can check one or more than one reconciliation file at a time.

A. Checking a Single Reconciliation File

1. Select **Tools and Utilities > Reconciliation Options > Check a Reconciliation File**. The 'Open' dialog box displays.



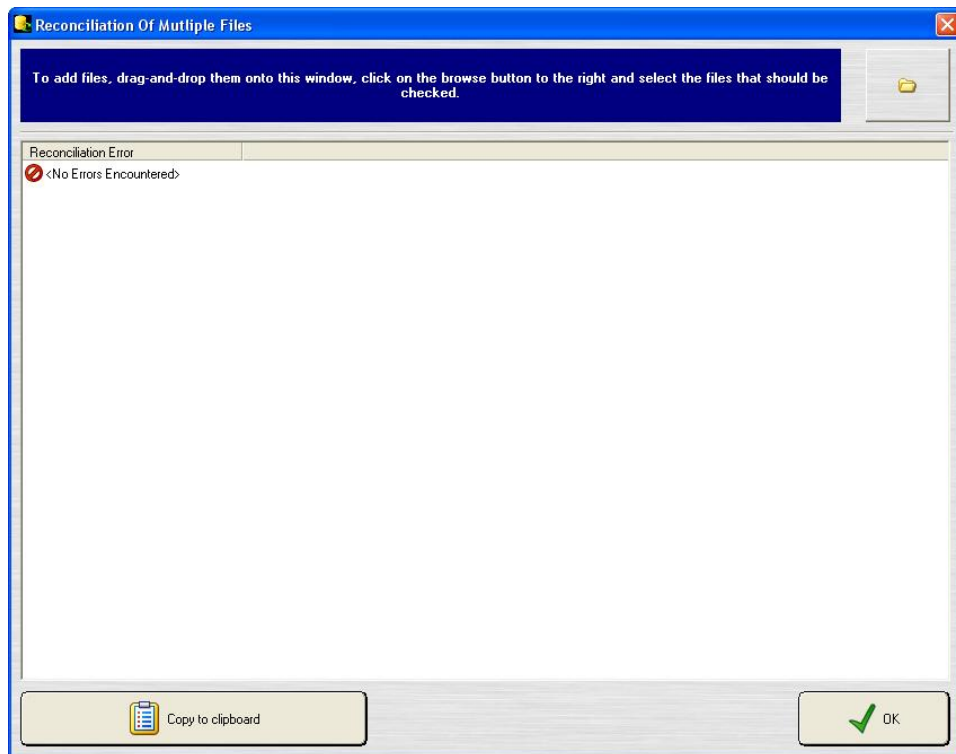
2. Select the drop-down arrow to the right of the 'Look In' field to browse the computer/network and select the location where the reconciliation file was stored.
3. Double-click on the file to open it. Reconcile file errors will display in a viewer for the administrator to review.



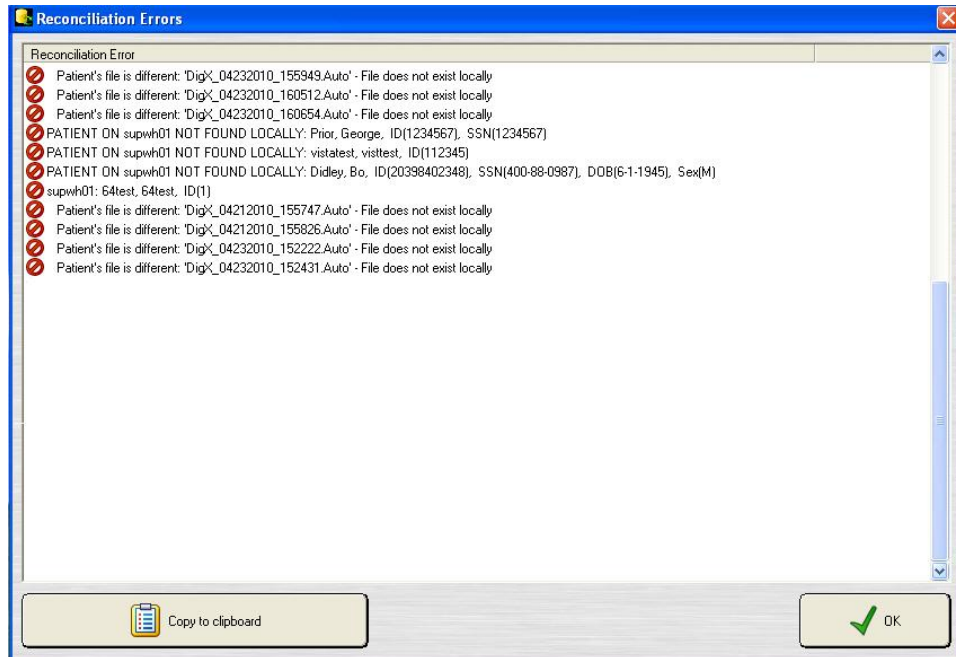
4. Click **OK** to close the viewer.

B. Checking Multiple Reconciliation Files:

1. Select **Tools and Utilities > Reconciliation Options > Check Multiple Reconciliation Files**. The multiple file viewer displays.



2. Add reconciliation files using one of the following options:
 - “Drag-and-Drop” each reconciliation file from Windows Explorer, or
 - Select the folder icon () to browse out to the location of each file and add them to the viewer.
3. Reconciliation file errors will display as each file is added to the viewer.



4. Click **OK** to close the viewer.

Displaying 'To Store' Database Records

i The 'To Store' database feature in XrayVision®, when enabled, automatically adds all newly acquired images to a database called the 'ToStoreDB'.

To view ToStoreDB records, select **Tools and Utilities > Display ToStore Database**. The viewer launches to display records currently in the ToStoreDB.

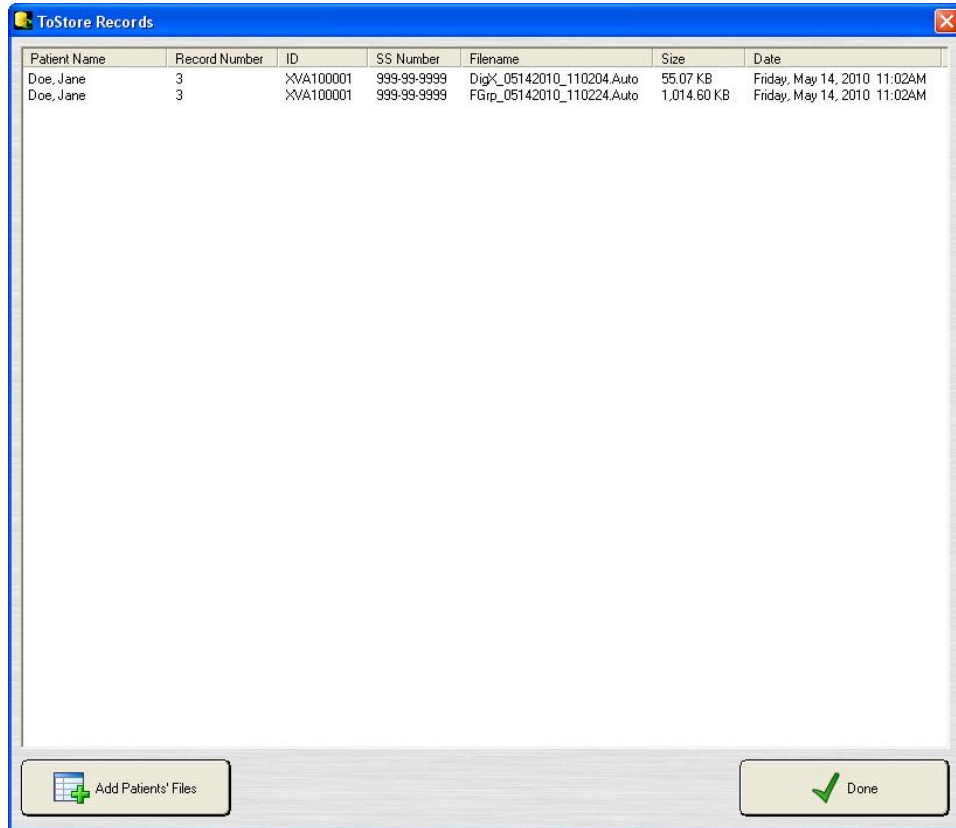
ToStore Records						
Patient Name	Record Number	ID	SS Number	Filename	Size	Date
Doe, Jane	3	XVA100001	999-99-9999	panora11 sm.MIB	254.70 KB	Wednesday, April 28, 1999 01:3
Doe, Jane	3	XVA100001	999-99-9999	DigX_03112010_141806.Auto	55.06 KB	Thursday, March 11, 2010 07:1E
Doe, Jane	3	XVA100001	999-99-9999	Ceph2 sm.MIB	276.36 KB	Wednesday, April 28, 1999 01:2
Doe, Jane	3	XVA100001	999-99-9999	TelCam.JPG	66.85 KB	Wednesday, April 28, 1999 01:2
Doe, Jane	3	XVA100001	999-99-9999	XV-Calibrate1.jpg	42.32 KB	Thursday, March 04, 2010 03:01
Doe, Jane	3	XVA100001	999-99-9999	fullmouth.MIB	848.39 KB	Wednesday, April 28, 1999 01:3
Doe, Jane	3	XVA100001	999-99-9999	DigX_03112010_140643.Auto	55.06 KB	Thursday, March 11, 2010 07:0E
Doe, John	1	XVA100000		FGrip_04012010_113857.Auto	804.29 KB	Thursday, April 01, 2010 03:39PI
Doe, John	1	XVA100000		Face.jpg	201.46 KB	Tuesday, April 11, 2000 09:52PK
Doe, John	1	XVA100000		fullmouth.MIB	848.39 KB	Wednesday, April 28, 1999 01:3
Doe, John	1	XVA100000		TelCam.JPG	66.85 KB	Wednesday, April 28, 1999 01:2
Doe, John	1	XVA100000		XV-Calibrate1.jpg	42.32 KB	Thursday, March 04, 2010 03:01
Doe, John	1	XVA100000		FGrip_04022010_090855.Auto	712 Bytes	Friday, April 02, 2010 01:08PM
Doe, John	1	XVA100000		FGrip_08261999_175157.Auto	5.83 MB	Monday, September 13, 1999 02
Doe, John	1	XVA100000		panora11 sm.MIB	254.70 KB	Wednesday, April 28, 1999 01:3
Doe, John	1	XVA100000		Thumbs.db	10.00 KB	Thursday, February 18, 2010 02:
Doe, John	1	XVA100000		XV-Calibrate3.jpg	37.46 KB	Thursday, March 04, 2010 03:0E
Doe, John	1	XVA100000		Ceph2 sm.MIB	276.36 KB	Wednesday, April 28, 1999 01:2
Doe, John	1	XVA100000		FGrip_08311999_124529.Auto	9.78 MB	Monday, September 13, 1999 02
Doe, John	1	XVA100000		ScrV_04281999_084249.Auto	254.70 KB	Wednesday, April 28, 1999 01:5

Adding Patient Files to the 'To Store' Database

i The 'To Store' database (ToStoreDB) stores XrayVision® images acquired after the last ToStoreDB synchronization transferred and cleared the previous records. However, patient files can also be manually added from within XV Sync™. This feature is useful in situations where a patient's images need to be quickly sent from one sync server to another on demand.

To add patient files to the ToStoreDB:

1. Select **Tools and Utilities > Display ToStore Database**. The viewer launches to display records currently in the ToStoreDB.
2. Select **Add Patients' Files** on the bottom left-hand corner. The 'Select Patients' dialog box displays with a list of patients in the local XrayVision® patient database.



- a. To add all patient images, select **Check All**.
- b. To add images captured within a specified date range, select **Check Date Range**. Enter a valid start and end date in the 'Specify Date Range' dialog box then click on **OK**.



3. When done, click on **OK** to exit the 'ToStore Records' viewer.

The ToStoreDB records will be transmitted when the next ToStoreDB synchronization is performed.

i APPENDIX A: XV SYNC™ IMPLEMENTATION SCENARIOS

Implementing XV Sync™: Overview

XV Sync™ enables the synchronization of remote Apteryx databases for a dental organization. Synchronization can be manually initiated or scheduled for weekly recurrence.

Administrators can initiate actions to:

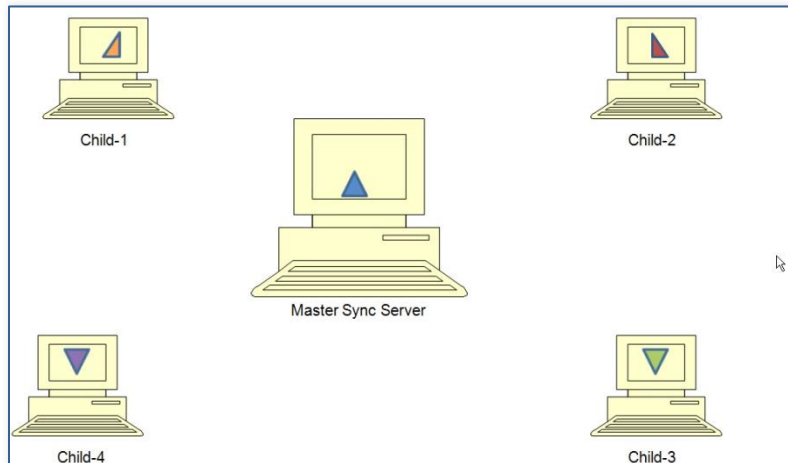
- Forward
- Retrieve
- Synchronize

Additionally, they can specify what to forward, retrieve, or synchronize:

- All patient images (all images)
- To Store Databases (ToStoreDB)
- Patient information only (PatientDB)

The ideal environment for an XV Sync™ implementation is an organization with a Central Business Office (CBO) and one or more remote locations.

In the following implementation scenarios:



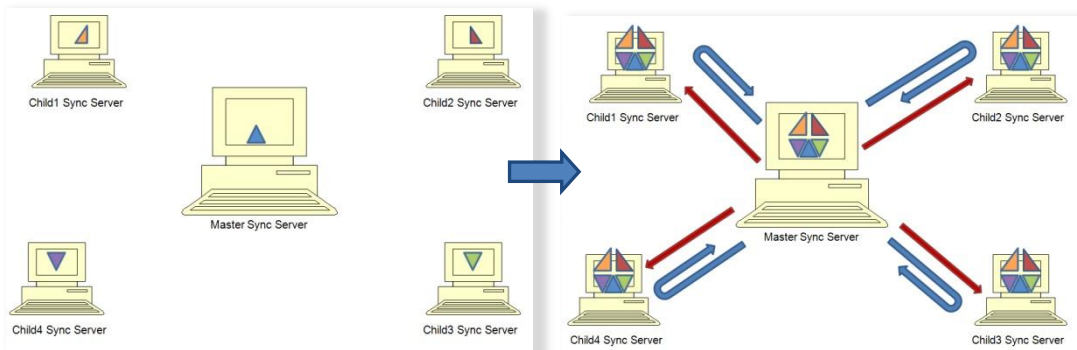
- One server (e.g. in a Central Business Office) is designated to schedule and initiate sync requests (hereafter referred to as a “Master Sync Server”).
- The other server(s) (e.g. in a remote locations) are designated to receive sync requests (hereafter referred to as a “Child Sync Server”).

The benefit of such an implementation is simplicity: managing schedules and general troubleshooting are simplified when one sync server initiates all synchronizations.

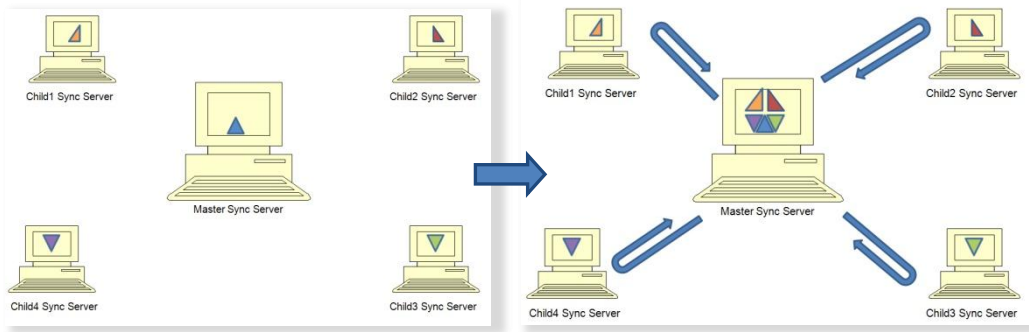
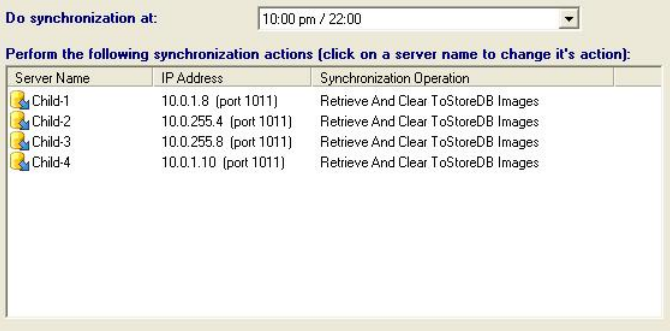
The two implementation scenarios presented below are for dental organizations that want to accomplish one of the following goals via XV Sync™:

- Generate and maintain equivalent patient databases at both Master and Child sync server locations
- Generate and maintain a composite of all patient databases on Master Sync Server only

Scenario #1: Equivalent Databases on All Sync Servers

Action	Objective and Execution Method																											
	 Overall Objective: After scheduled synchronization completes, Master and Child Sync Server will be updated with new images that were captured at all locations.																											
A. Initial Sync¹ (manual, periodic, or scheduled)	Objective: Build a composite of all databases on each sync servers (master and children) Execution Method: Master Sync Server performs the following sync operation with each child: Retrieve All Images Forward All Images																											
B. Scheduled Syncs	Objective: Maintain composite databases on all sync servers, updating each with new images captured at all locations. Execution Method: Master Sync Server performs the following sync operation with each child: Retrieve and Clear ToStoreDB Images. (<i>Note: Add received images to the 'To Store' database must be enabled on Master.</i>) Forward ToStoreDB Images. Setup desired day-of-week schedules as shown below: Do synchronization at: 10:00 pm / 22:00 Perform the following synchronization actions (click on a server name to change it's action): <table><thead><tr><th>Server Name</th><th>IP Address</th><th>Synchronization Operation</th></tr></thead><tbody><tr><td>Child-1</td><td>10.0.1.8 (port 1011)</td><td>Retrieve And Clear ToStoreDB Images</td></tr><tr><td>Child-2</td><td>10.0.255.4 (port 1011)</td><td>Retrieve And Clear ToStoreDB Images</td></tr><tr><td>Child-3</td><td>10.0.255.8 (port 1011)</td><td>Retrieve And Clear ToStoreDB Images</td></tr><tr><td>Child-4</td><td>10.0.1.10 (port 1011)</td><td>Retrieve And Clear ToStoreDB Images</td></tr><tr><td>Child-1</td><td>10.0.1.8 (port 1011)</td><td>Forward ToStoreDB Images</td></tr><tr><td>Child-2</td><td>10.0.255.4 (port 1011)</td><td>Forward ToStoreDB Images</td></tr><tr><td>Child-3</td><td>10.0.255.8 (port 1011)</td><td>Forward ToStoreDB Images</td></tr><tr><td>Child-4</td><td>10.0.1.10 (port 1011)</td><td>Forward ToStoreDB Images</td></tr></tbody></table>	Server Name	IP Address	Synchronization Operation	Child-1	10.0.1.8 (port 1011)	Retrieve And Clear ToStoreDB Images	Child-2	10.0.255.4 (port 1011)	Retrieve And Clear ToStoreDB Images	Child-3	10.0.255.8 (port 1011)	Retrieve And Clear ToStoreDB Images	Child-4	10.0.1.10 (port 1011)	Retrieve And Clear ToStoreDB Images	Child-1	10.0.1.8 (port 1011)	Forward ToStoreDB Images	Child-2	10.0.255.4 (port 1011)	Forward ToStoreDB Images	Child-3	10.0.255.8 (port 1011)	Forward ToStoreDB Images	Child-4	10.0.1.10 (port 1011)	Forward ToStoreDB Images
Server Name	IP Address	Synchronization Operation																										
Child-1	10.0.1.8 (port 1011)	Retrieve And Clear ToStoreDB Images																										
Child-2	10.0.255.4 (port 1011)	Retrieve And Clear ToStoreDB Images																										
Child-3	10.0.255.8 (port 1011)	Retrieve And Clear ToStoreDB Images																										
Child-4	10.0.1.10 (port 1011)	Retrieve And Clear ToStoreDB Images																										
Child-1	10.0.1.8 (port 1011)	Forward ToStoreDB Images																										
Child-2	10.0.255.4 (port 1011)	Forward ToStoreDB Images																										
Child-3	10.0.255.8 (port 1011)	Forward ToStoreDB Images																										
Child-4	10.0.1.10 (port 1011)	Forward ToStoreDB Images																										

Scenario #2: Composite Database on Master Sync Server Only

Action	Objective and Execution Method
 Overall Objective: After scheduled synchronization completes, Master Sync Server will be updated with new images that were captured at all sync server locations.	
A. Initial Sync¹ (manual, periodic, or scheduled)	Objective: Build a composite database with all images on Master Sync Server Execution Method: Master Sync Server performs a Retrieve all Images from each child sync server.
B. Scheduled Syncs	Objective: Maintain composite databases on Master Sync Server only, updating it with new images captured at locations. Execution Method: Master Sync Server performs a Retrieve and Clear ToStoreDB Images from each child. Setup desired day-of-week schedules as shown below: 

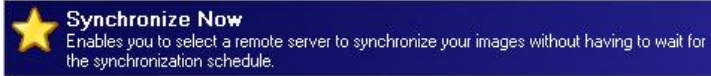
1. Consideration of total patient database sizes must be taken into account. It may be more practical to copy/deliver a composite database to sync server location on hard disk (DVD, external HD, etc.) rather than performing an initial sync.

i APPENDIX B: SYNCHRONIZATION OPERATIONS & OPTIONS

Overview

i XV Sync™ provides multiple methods for synchronizing databases. Administrators can choose to:

- Synchronize on-demand with one remote sync server using the **Synchronize Now** option



- Create schedules to synchronize with one or more remote sync servers periodically or on specific day/time of the week using the **Edit Synchronization Schedule** option.



Whether on-demand or scheduled, administrators can initiate sync operations to:

- Forward
- Synchronize
- Retrieve

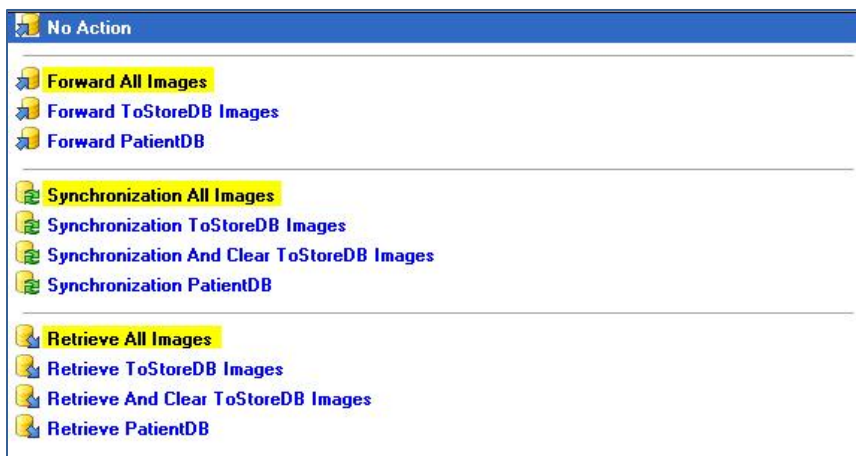
Additionally, they can specify what to forward, synchronize, or retrieve:

- All patient images (... All images)
- To Store Databases (... ToStoreDB)
- Patient information only (... PatientDB)

The following section describes these operations in more detail.

Forward, Synchronize, or Retrieve All Patient Images

All images in a patient database can be forwarded, retrieved, or synchronized using one of the following highlighted options on the 'What type of synchronization should be done' drop-down list:



- **Forward All Images** will send all patient images from an initiating sync server to a targeted, remote sync server.

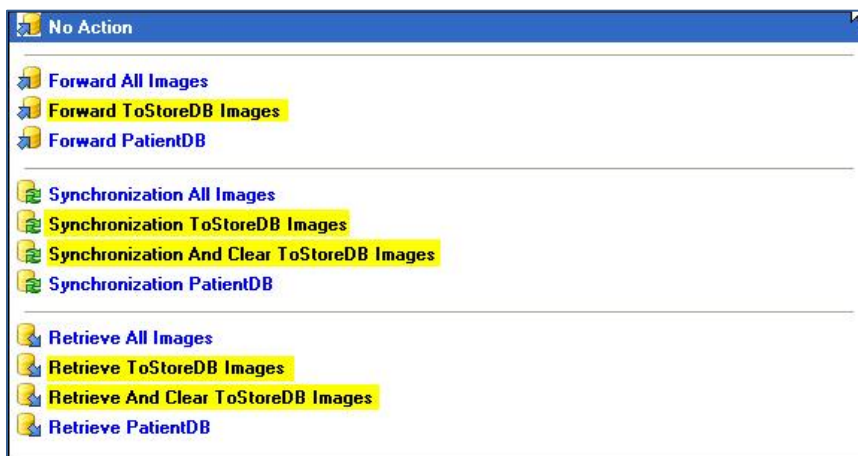
- **Synchronization All Images** will send all patient images to a targeted remote sync server. It will also retrieve all patient images from the targeted sync. When the operation is complete, the patient databases residing on each sync server will be equivalent.
- **Retrieve All Images** will target a remote sync server and pull all patient images, storing them locally.

Warning: The operations above will transfer every single image in a patient database across the network, regardless of whether or not the image already exists in the receiving database. Consideration of total patient database size and network bandwidth must be taken into account.

Forward, Synchronize, or Retrieve ToStoreDB Images

i The 'To Store' database feature in XrayVision®, when enabled, automatically adds all newly acquired images to an index called the 'ToStoreDB'. The ToStoreDB adds efficiency to a synchronization process by avoiding the need to query an entire patient database on a targeted remote sync server to determine which images are new.

All images listed in a ToStoreDB can be forwarded, retrieved, or synchronized using one of the following highlighted options on the 'What type of synchronization should be done' drop-down list:



- **Forward ToStoreDB Images** will send all patient images listed in the ToStoreDB from an initiating sync server to a targeted, remote sync server. If a scheduled synchronization is performed, the ToStoreDB is cleared on the initiating sync server when the operation completes.
- **Synchronization ToStoreDB Images** will send all patient images listed in the ToStoreDB to the targeted sync server. It will also retrieve ToStoreDB records from the targeted sync server and store them locally. If a scheduled synchronization is performed, the ToStoreDB is cleared on the initiating sync server when the operation completes.
- **Synchronization and Clear ToStoreDB Images** performs the same operation as the option above. Additionally, the ToStoreDB index will be cleared on the targeted, remote sync server.
- **Retrieve ToStoreDB Images** will target and pull all records from a remote sync server's ToStoreDB.
- **Retrieve and Clear ToStoreDB Images** performs the same operation as the option above. Additionally, the ToStoreDB index will be cleared on the targeted, remote sync server.

Forward, Synchronize, or Retrieve PatientDB

i Some dental organizations manage all their local and remote patients from a central business office (CBO). Although the new patient record is created at the CBO, a patient may be scheduled to visit a remote location for dental x-rays.

The 'PatientDB' sync operations are designed to query and transmit only patient records and associated patient information (SS#, ID, gender, DOB, etc.) between sync servers. No images are transmitted in 'PatientDB' sync processes. If a record does not exist at the targeted sync server location, a patient file will be created in the patient database.

PatientDB information can be forwarded, retrieved, or synchronized using one of the following highlighted options on the 'What type of synchronization should be done' drop-down list:

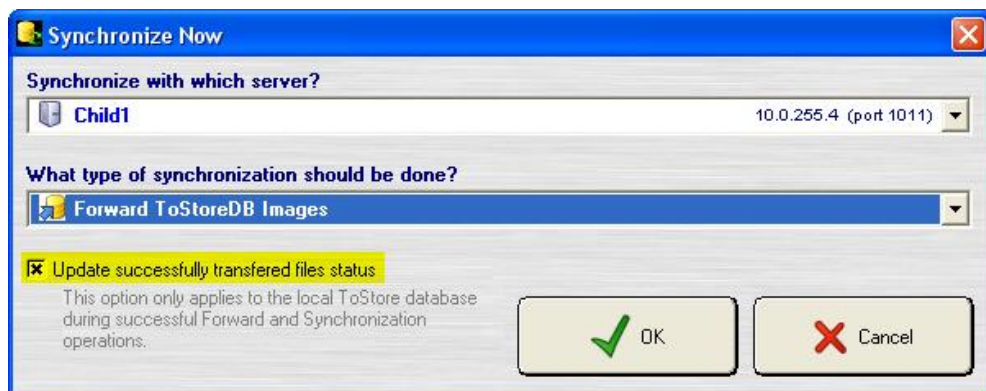


- **Forward PatientDB** will send all patient folder and demographic information from an initiating sync server to a targeted, remote sync server.
- **Synchronization PatientDB** will send all patient folder and demographic information to the targeted sync server. It will also retrieve the information from the targeted sync server and store them locally.
- **Retrieve ToStoreDB** will target and pull all patient folder and demographic information from a remote sync server.

Sync Now Option: Update Successfully Transferred Files Status

i Unlike scheduled synchronizations, when an on-demand (Synchronize Now) **Forward ToStoreDB Images** or **Synchronize ToStoreDB Images** is performed, by default the local ToStoreDB does not get cleared.

To clear out the ToStoreDB after an on-demand synchronization completes, select the **Update successfully transferred files status** radio-button on the 'Synchronize Now' dialog box.



i APPENDIX C: XV SYNC™ COMMUNICATION LOGS

Overview

i XV Sync™ creates logs that serve as useful troubleshooting tools for administrators managing sync server locations.

Log files are stored in the Apteryx install directory under a folder named \Logs\. Logs can be opened/viewed in a text editor application such as Notepad.

The following sections describe the following logs created on sync servers:

- Master Logs
- Communication Logs
 - Client log
 - Server log

XV Sync™ Master Log

When XV Sync™ is launched on a server, a master log is created in the /Logs/ folder with the following naming convention:

[Computer Name]_XVSyncMaster_yyyymmdd_hhmmss.log

```

SUPSN01_XVSyncMaster_20100505_104022.Log - Notepad
File Edit Format View Help
14:40:22:0157 Logging enabled @ wednesday, May 05, 2010 10:40:22AM;
14:40:22:0157 Computer's Name: SUPSN01
14:40:22:0157 User's Name: stefano.nguma
14:40:22:0157 Computer's IP: 10.0.255.6
14:40:22:0157 Computer's OS: 5.1.2600 Platform: 2
14:40:22:0157
14:40:22:0173 Closing our master port
14:40:22:0173 Opening our master port: 10.0.255.6 port 1011
14:52:04:0573 Closing our master port
14:52:04:0573 Closing our master port
14:52:04:0573 Logging closed @ wednesday, May 05, 2010 10:52:04AM
    
```

The log tracks information such as:

- When XV Sync was launched (logging enabled)
- Server information (Computer name, IP, port, OS etc.)
- User's domain name (user name)
- When XV Sync™ was exited (logging closed)

XV Sync™ Communication Logs: Client Log

When a sync server initiates and completes a sync with a remote sync server, a client log is created in the local /Logs/ folder with the following naming convention:

[Computer Name]_XVSyncClient_yyyymmdd_hhmmss.log

```

SUPSN01_XVSyncClient_20100505_113215.Log - Notepad
File Edit Format View Help
15:32:15:0429 Connecting to server:
15:32:15:0429 Name: lab1
15:32:15:0429 IP: 10.0.255.4
15:32:15:0429 Port: 1011
15:32:15:0429 Communication Key Specified?: No
15:32:15:0429 Our database: C:\Program Files\Apteryx\Apteryx Imaging\Pa
15:32:15:0429 Synchronization Action: ToStoreDB Synchronize And Clear
15:32:15:0429 Trying to connect to the server at: 10.0.255.4 port 1011
15:32:15:0429 We connected to the server at: 10.0.255.4 port 62211
15:32:15:0445 Received Packet: who Are You/I
15:32:15:0445 Computer Name:
15:32:15:0445 User Name:
15:32:15:0445 XV Sync Name:
15:32:15:0445 XV Sync Key Length: 0
15:32:15:0461 Sending Packet: who Are You/I
15:32:15:0461 Computer Name: SUPSN01
15:32:15:0461 User Name: stefano.nguma
15:32:15:0461 XV Sync Name: stefano
15:32:15:0461 XV Sync Key Length: 0
15:32:15:0461 Received Packet: Start
15:32:15:0476 Sending Packet: Patient File Entry
15:32:15:0476 Patient: Doe, Janet, 123-456-7890, , , (1 of 1 pat

```

The log tracks information such as:

- When sync was initiated (logging enabled)
- Server information (Computer name, IP, port, OS etc.)
- Type of synchronization performed (Synchronization Action)
- User's domain name (user name)
- Remote sync server information (Computer name, IP, port, database location etc.)
- File transfer information (each patient image and patient file forwarded and/or retrieved during the sync operation)
- When the sync completed (logging closed)

XV Sync™ Communication Logs: Server Log

When a remote sync server receives a sync request, a server log is created in the local /Logs/ folder with the following naming convention:

[Computer Name]_XVSyncServer_yyyymmdd_hhmmss.log

```

LAB1-XP_XVSyncServer_20100505_113259.log - Notepad
File Edit Format View Help
15:32:59:0781 Sending Packet: who Are You/I
15:32:59:0781 Computer Name:
15:32:59:0781 User Name:
15:32:59:0781 XV Sync Name:
15:32:59:0781 XV Sync Key Length: 0
15:32:59:0781 Received Packet: who Are You/I
15:32:59:0781 Computer Name: SUPSN01
15:32:59:0781 User Name: stefano.nguma
15:32:59:0781 XV Sync Name: stefano
15:32:59:0781 XV Sync Key Length: 0
15:32:59:0781 Network Speed Test: 0 ms
15:32:59:0781 We are now servicing this connection
15:32:59:0796 Sending Packet: Start
15:32:59:0812 Received Packet: Patient File Entry
15:32:59:0812 Patient: Doe, Janet, 123-456-7890, , , (1 of 1 pat
15:32:59:0812 File: Digx_05052010_112850.Auto (1 of 2 files)(File
15:32:59:0812 Matching: Doe, Janet, 123-456-7890,
15:32:59:0812 No matches
15:32:59:0812 Creating patient folder and record
15:32:59:0953 Folder Created: DOEJANET_123456789
15:32:59:0953 Sending Packet: Need Patient File
15:32:59:0968 Received Packet: File in chunks: file size is 55.07

```

The log tracks information such as:

- When the sync request was received (logging enabled)

- Server information (Computer name, IP, port, OS etc.)
- User's domain name (user name)
- Remote sync server information (Computer name, IP, port, database location etc.)
- Network speed test (reports on the internet connection speed between sync servers; units – milliseconds)
- File transfer information (each patient image and patient file received and/or taken during the sync operation)
- When the sync completed (logging closed)

APPENDIX D: XV SYNC™ EMAIL NOTIFICATIONS

Overview

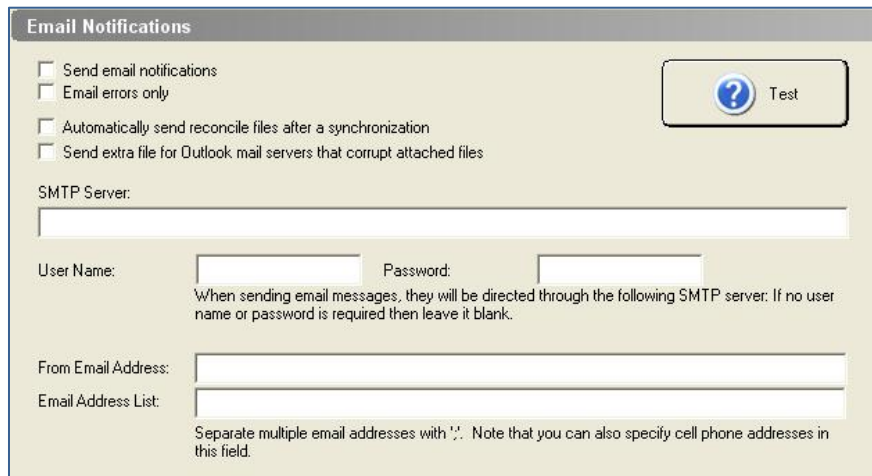
 XV Sync™ can be configured to send useful email notifications that inform administrators when synchronizations with other sync servers start and complete. Additionally, a 'sync error' email notification will be sent whenever sync operations fail.

Note: XV Sync's email utility does not support connections that require a secure socket layer (SSL) or authenticated encryption.

Configuring Email Notifications

Email notifications can be enabled and configured on the 'XV Sync Options' screen.

1. From the navigation toolbar on the left, select **Preferences** to open and configure the 'XV Sync Options' screen.
2. Scroll down to the 'Email Notifications' section.



3. Complete the following fields:
 - a. **Send email notifications** - Enables XV Sync™ to send communication notifications via email to recipients.
 - b. **Email errors only** – If enabled, an email notification will be sent to recipients only when failures occur. **Note:** *Send email notifications must be enabled for this option to work.*
 - c. **Automatically send reconcile files after a synchronization** –
A reconciliation file provides an administrator the ability to check the patient database on their sync server against a database on a remote sync server. The reconcile file will be sent to a targeted remote sync server once the synchronization completes.

Enable this feature to automatically send a reconcile file to recipients after every on-demand or schedule synchronization occurs.
 - d. **Send extra file for Outlook mail servers that corrupt attached files** – This is a known issue with Microsoft Exchange Server 2003. Enable this option if this occurs.

- e. 'SMTP Server' – Enter the name or the IP address of the SMTP server to allow XV Sync™ to send outgoing mail.
 - f. 'User Name' and 'Password' – If the SMTP server requires authentication, enter the user name and/or password in the provided fields.
 - g. 'From Email Address' – Enter the sender's email address in the provided field.
 - h. 'Email Address List' – Enter the recipient(s) email address in the provided field. Multiple email addresses must be separated with a semi-colon (;).
4. Select the **Test** button to send a 'test' email to the recipient(s) in the email address list.

Sample Email Notifications

➤ 'Sync Start' Email Notification

```
From: admin@abccompany.com
Sent: Friday, May 07, 2010 4:39 PM
To: recipient@abccompany.com
Subject: XV Sync Start: SUPWH01

XV Sync Start

From Computer: 'SUPWH01'
IP: 10.0.255.11
Time: Friday, May 07, 2010 4:30:03 PM

Synchronizing To: 'Child1'
Synchronizing To IP: 10.0.255.4
Synchronizing To Port: 1011
Communication Key Specified?: No

Synchronizing Action: 'Forward All Images'
```

➤ 'Sync End' Email Notification

```
From: admin@abccompany.com
Sent: Friday, May 07, 2010 4:39 PM
To: recipient@abccompany.com
Subject: XV Sync End: SUPWH01

XV Sync End

From Computer: 'SUPWH01'
IP: 10.0.255.11
Time: Friday, May 07, 2010 4:30:02 PM

Synchronizing To: 'Child1'
Synchronizing To IP: 10.0.255.4
Synchronizing To Port: 1011
Communication Key Specified?: Yes

Synchronizing Action: 'Forward ToStoreDB Images'
Last Action Date Time: Friday, April 23, 2010 04:08:12 PM
```

➤ **'Sync Error' Email Notification**

```
From: admin@abccompany.com
Sent: Friday, May 07, 2010 4:39 PM
To: recipient@abccompany.com
Subject: Communication Error Encountered: SUPWH01
```

```
Communication Error Encountered
The attempt to connect to the remote server timed out
```

```
Computer: SUPWH01
IP: 10.0.255.11
Time: Friday, May 07, 2010 4:42:37 PM
```

```
|
```

APPENDIX E: XV SYNC™ PERFORMANCE OPTIMIZATION

Image Volume Worksheet

When planning an XV Sync™ implementation, provisions need to be made to accommodate the following:

- Anticipated size of data to be transferred during sync operations
- Anticipated growth of patient databases as a result of synchronizations

Complete the following worksheet to gather the necessary information that can assist Apteryx, Inc. in making recommendations to optimize the performance of your implementation.

Question	Answer
What is the average file size of the different digital images captured at each clinic? ➤ Hardware model: ❖ IO ❖ PAN ❖ CEPH ❖ CT <i>Note: The following benchmarks will be used if unknown:</i> ➤ Single Intra-oral X-ray : 0.5 MB – 2MB ➤ Intra-Oral Camera Image: 5 MB ➤ Full-mouth layout: up to 30 MB ➤ Panoramic X-ray: 5MB	
How many images are captured of each type on a monthly basis? ➤ Hardware model: ❖ IO ❖ PAN ❖ CEPH ❖ CT	
Does the organization feel that the number of images and the file sizes will be growing in the future?	
What is the size, version, and manufacturer of any existing digital images?	

